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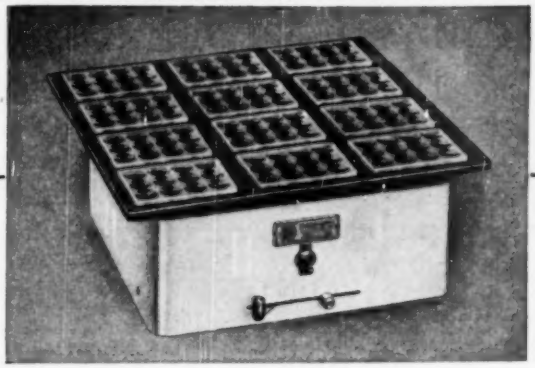

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Volume 39 — July, 1949 — Number 7

CONTENTS

PAGE

Variation in the Hospital Care of Premature Infants 839
Edward R. Schlesinger, M.D., and Elizabeth Parkhurst, M.Sc.

The Care of Premature Infants in New York City 845
Helen Wallace, M.D., and Leona Baumgartner, M.D.

The Child Health Institute in Rochester, Minnesota 854
Benjamin Spock, M.D.

Relation of Nutrition to Infection in Children 858
Junius M. Rawlings, M.D.

Influence of Protein Nutrition on Experimental Infection—Physiological Aspects 862
Jack Metcoff, M.D.

Laboratory Tests in the Diagnosis of Brucellosis 866
Norman B. McCullough, Ph.D., M.D.

Chronic Brucellosis—The Unsatisfactory Status of Current Diagnostic Methods 870
Harold J. Harris, M.D.

Continued on page vi

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear. These are not to be regarded as expressing the views of the American Public Health Association unless formally adopted by vote of the Association.

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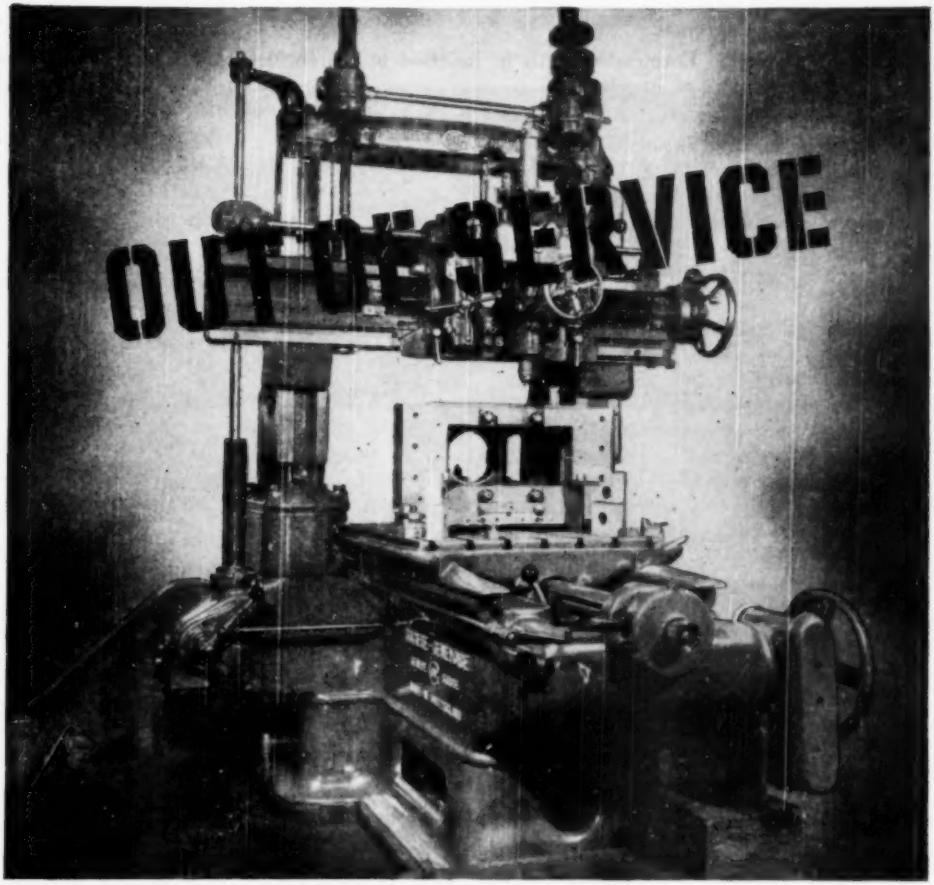

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Rabies Vaccine Encephalomyelitis in Relation to the Incidence of Animal Rabies in Los Angeles 875
Charles F. Pait, M.D., and Harold E. Pearson, M.D.

A "Physical Growth Record" for Use in Elementary and High Schools . . 878
Howard V. Meredith, Ph.D.

Techniques of Counseling in Regard to Health Problems 886
Ruth Strang, Ph.D.

Progress Report on Hospital Survey and Construction Act 889
V. M. Hoge, M.D.

The Hospital Survey and Construction Program—Environmental Sanitation 893
Malcolm C. Hope

The Quality of Medical Care in a National Health Program 898
A Statement by the Subcommittee on Medical Care.
Dean A. Clark, M.D., Chairman

EDITORIALS:
Possible Hazards from the Use of DDT 925
Advances in Antibiotics Research 927
Trypanosomiasis 928
Hospital Delivery and Infant Mortality 930

Clearing House on Public Health Salary Information and Personnel Needs 931

Books and Reports 935

Books Received 943

A Selected Public Health Bibliography 945
Raymond S. Patterson, Ph.D.

Motion Picture Film Reviews 947
Homer N. Calver, Review Editor

Association News 949
Applicants for Membership. Hotel Reservation Form for Seventy-seventh Annual Meeting, New York, N. Y., October 24–28.

Employment Service 955

News from the Field 959

Conferences and Dates 968

Reprint prices furnished upon request

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INDEX TO ADVERTISERS

	Page
American Public Health Association:	
Affiliated Societies	XXXII
Book Service	XXIX, XXXII, XXXV
Governing Council	X, XI
Membership Application	XXXIII
Sustaining Members	XXVII
American Meat Institute	XXXVII
American Optical Company	XIII
Ames Company, Inc.	II
Bausch & Lomb Optical Company	XXXIV
Bristol Laboratories	XXVIII
Cargille Scientific, Inc.	XXI
Cereal Institute, Inc.	XIV, XV
Certified Blood Donor Service	XXXIII
Clay-Adams Company, Inc.	III
Commercial Solvents Corporation	IX
Corning Glass Works	XXIII
Crown Cork & Seal Company	XII
Cutter Laboratories	V
Difco Laboratories	Back Cover
Directory of Exhibits	XXX, XXXI
Directory of Health Service	968
Black & Veatch	
Merit System, A.P.H.A.	
Diversey Corporation, The	968
Dixie Cup Company	XXI
Garrard Press, The	XXI
International Equipment Company	XVII
Lederle Laboratories	VII
Lily-Tulip Cup Corporation	XVIII
Merck & Co., Inc.	XVI
Nelson, Thomas & Sons	XXV
Oval Wood Dish Corporation	VIII
Philip Morris Company, Ltd.	XXIV
Ralston Purina Company	XXXV
Reynolds, R. J., Tobacco Company	XXXVI
Sealright Company, Inc., The	XX
Vitamin Food Co., Inc.	VIII
Wallace & Tiernan Company, Inc.	XXI, XXVI
Williams & Wilkins Company, The	XXII
Wyeth, Inc.	XIX

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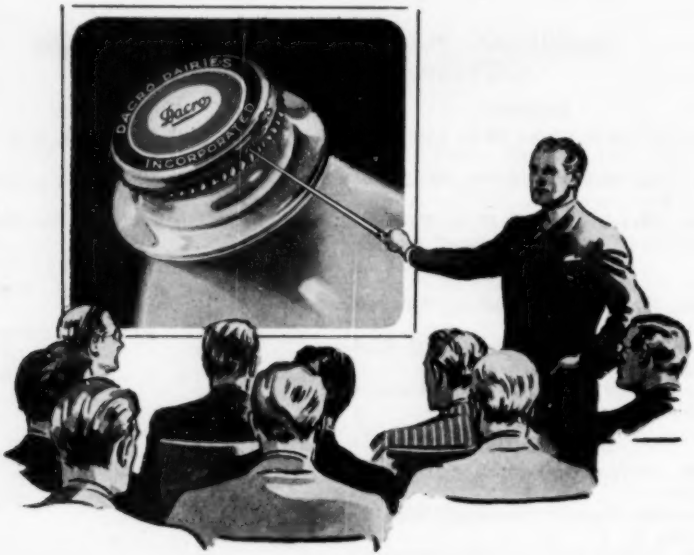

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A study* recently concluded at the Departments of Physiology and Nutrition of the college of medicine at a distinguished university established that the value of an adequate breakfast, as recommended by nutrition authorities, is definitely reflected in maximum work output and mental acuity during the pre-noon hour.

It also demonstrated that the long continued omission of breakfast detrimentally affects maximum work output, simple and choice reaction time, and neuromuscular tremor.

Under adequately controlled conditions data were collected on the effects of four different breakfast habits on the maximum work output, mental acuity, and neuromuscular tremor of six young women ranging from 22 to 27 years in age. The breakfast habits investigated constituted habituation to an 800 calorie breakfast, effects of which were considered the critical standard, to no breakfast, to coffee only (1 cup of coffee, 1 ounce of cream, no sugar), and to a 400 calorie breakfast.

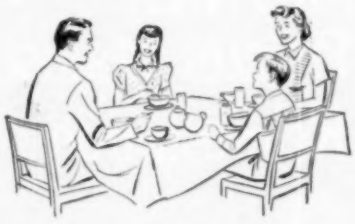
*Reprint of the study referred to will be sent on request.

From the data gathered the following conclusions were reached:

1. When "no breakfast" was the morning habit, maximum work output showed a significant *decrease*, while a notable *increase* resulted in simple and choice reaction time and in tremor magnitude.
2. Habituation to coffee only showed a similar *decrease* in maximum work output, with corresponding *increase* in reaction time and in tremor magnitude.
3. When habituation to the 400 calorie breakfast was accomplished after the "coffee only" period, a significant *increase* over the findings in the "coffee only" period in maximum work output resulted and both simple and choice reaction time as well as muscle tremor magnitude showed a noteworthy *decrease*.

The authors point out that no direct comparison could be made of the physiologic responses during the 400 calorie and 800 calorie breakfast periods, because the breakfast period of "coffee only" occurred between the 800 calorie and 400 calorie periods.

This controlled investigation now provides experimentally established support for the widely advanced admonition "Eat an Adequate Breakfast." For, though the authors do not draw this conclusion, it may well be reasoned inversely that maximum work output should be increased, and mental acuity improved, when faulty breakfast habits are replaced by the eating of an adequate morning meal.



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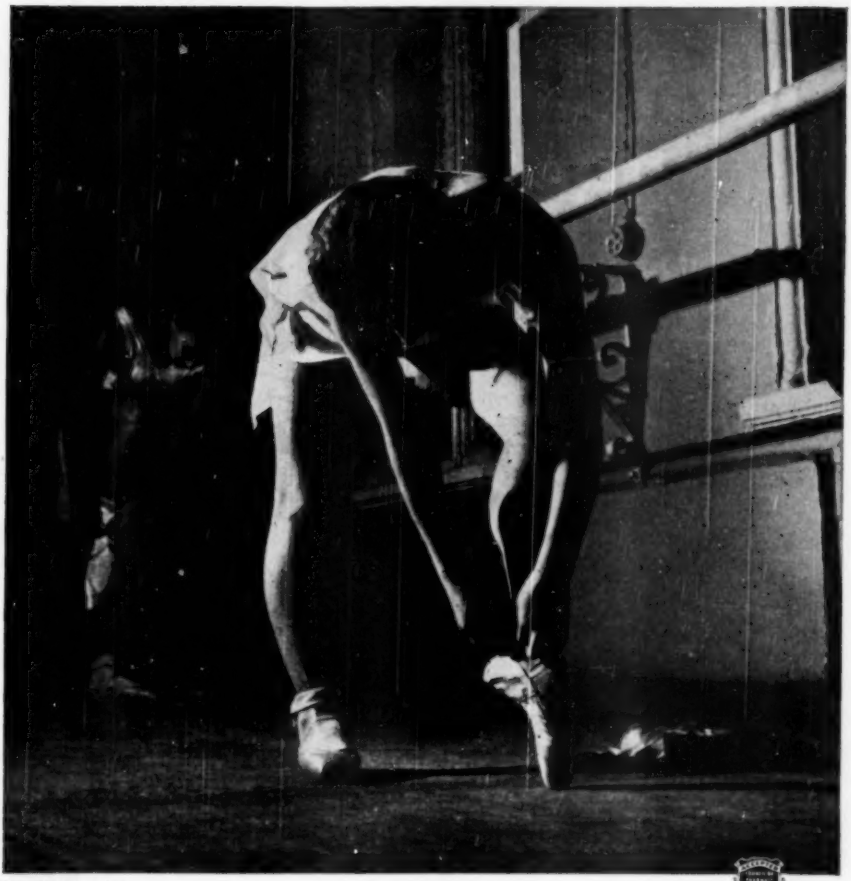

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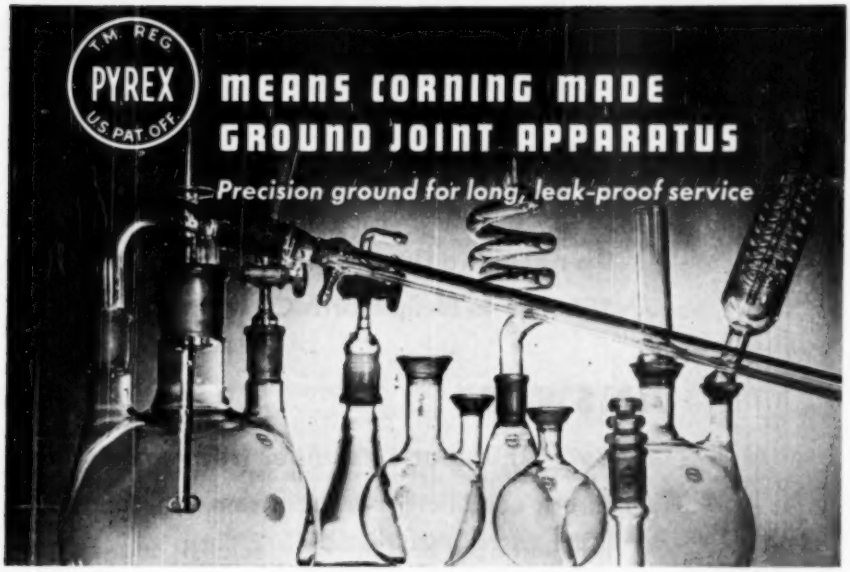

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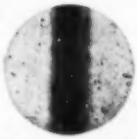

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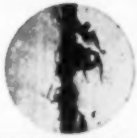

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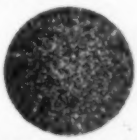

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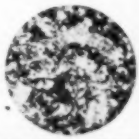

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Variation in the Hospital Care of Premature Infants*

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THE resolution on prematurity passed at the 1947 Annual Meeting and today's discussion at a joint meeting of the Health Officers and Maternal and Child Health Sections of the Association attest to the growing emphasis placed upon a public health approach to the problem of prematurity. We are leaving the hit or miss era in premature care and entering the stage of large-scale organized programs. If energy and funds are to be expended wisely in this field, critical appraisal must be made of the content of programs, existing and planned, and techniques must be developed to evaluate the results of such programs.

As a first step in this direction it is desirable to have a picture of the types of care given to premature infants in leading teaching hospitals, and to determine what effect, if any, variations in such care have upon the fate of the premature. Such knowledge is also helpful in planning additional or improved facilities for adequate care of premature infants in a given area according to accepted medical standards.

With these factors in mind a study was made of the care given to premature infants born during 1945 and 1946 in 6 teaching hospitals in New York State, 2 in New York City, and 4 elsewhere in the state. Data were obtained by statisticians directly from the hospital records of all infants weighing less than 2,500 gm. at birth covering such matters as birth weight, weight at time of transfer from one type of service to another, and on discharge from the hospital, and number of days' care given in incubators, in premature nurseries not in incubators, and in the regular new-born nursery. Lists of such infants supplied by each hospital were cross-checked with information on birth and death certificates available in the Office of Vital Statistics.

All the hospitals studied had special facilities for the care of premature infants including premature nurseries with modern incubators. The adequacy of

* Presented at a Joint Session of the Health Officers and Maternal and Child Health Sections of the American Public Health Association at the Seventy-sixth Annual Meeting in Boston, Mass., November 10, 1948.

TABLE 1

Per cent of Infants Weighing 1,750–2,499 Grams at Birth, and Surviving to Discharge, Receiving Care in Premature Nursery

Hospital	Per cent placed in premature nursery			Per cent of those placed in premature nursery receiving incubator care		
	1,750–1,999 grams	2,000–2,249 grams	2,250–2,499 grams	1,750–1,999 grams	2,000–2,249 grams	2,250–2,499 grams
Total	97	88	34	67	60	40
A	79	72	54	100	100	100
B	100	88	17	100	100	100
C	100	96	6	100	100	100
D	97	80	20	97	98	78
E	100	96	2	27	11	—
F	100	100	100	23	8	3

these facilities and the qualitative aspects of care rendered were not investigated. The data obtained can only provide a picture of actual practice in selected teaching institutions during a given period of time.

No significant variation was found in the 6 teaching hospitals in the type of care rendered to premature infants who weighed less than 1,500 gm. at birth. All infants in this birth weight group who survived the delivery room were placed in incubators in the premature nursery. In the birth weight group between 1,500 and 1,750 gm. only minor variations in care were noted. At the dividing line of 1,750 gm., deviations in the type of care became rather marked. As seen in Table 1, in 1 hospital only 79 per cent of the infants in the weight group, 1,750 to 2,000 gm. were placed in the premature nursery in contrast to the other study hospitals in which all, or nearly all, the infants were placed. Among the heavier prematures the differences in care were even sharper. In 1 hospital in New York City, all infants weighing up to 2,500 gm. received care in the premature nursery. In the other hospitals the percentage of infants placed in the premature nursery dropped off in the weight group 2,000 to 2,250 gm., and in 4 of the hospitals most of the infants in the weight group above 2,250 gm. were placed in the regular new-born nursery.

Further variation was discovered in the percentage of infants who received incubator care. In 3 of the 4 upstate study hospitals, all infants who entered the premature nursery were placed in incubators and remained there until discharge from the hospital, even though special heat and humidity controls were discontinued well before discharge. At the opposite extreme, in the hospital in New York City in which all infants less than 2,500 gm. were admitted to the premature nursery, incubator care was given to only 23 per cent of infants weighing between 1,750 and 2,000 gm., to 8 per cent in the next weight group, and to 3 per cent in the group just below 2,500 gm.

In the planning of facilities for care of premature infants it is important to have an idea of the average days of hospital care required for all premature infants, surviving or dying. In the study hospitals an average of 22 days of care is found for all premature infants (exclusive of those held for non-medical reasons) if a half day of care is arbitrarily assigned to infants dying during the first day of life. The range was 19 to 25 days. The greater part of the care was given in the premature nursery even in those hospitals in which the majority of the larger infants were placed directly in the regular nursery, since the hospital stay of the larger infants was comparatively short.

A similar analysis was made of the care rendered infants surviving to dis-

charge from the hospital as this gives a better picture of the actual care rendered. An average of 27 days of care was given to the surviving infants, with a range of 24 to 32 days in the various hospitals studied. The average number of days' care in incubators in the 2 teaching hospitals in New York City was very low since many infants were removed fairly promptly from the incubator to an unheated crib in the premature nursery.

These data were broken down further by weight, and the weight group 2,000 to 2,250 gm. is chosen to illustrate in detail the variations involved (Table 2). In the 4 upstate study hospitals about 12 per cent of the total care rendered premature infants was given in the regular new-born nursery. Of the 2 study hospitals in New York City, 1 gave no care to prematures in the regular nursery at any time, and the other gave only 1 per cent of care in the regular nursery.

Marked variation was also found in the proportion of care given in the incubator and in unheated cribs in the premature nursery. In the 2 study hospitals in New York City, 98 and 99 per cent of the total care to premature infants in the weight group 2,000–2,250 gm. was given in unheated cribs in the premature nursery as contrasted with the 3 other hospitals in which 73 to 97 per cent of care to the group was given in incubators.

The variation was also marked in the next lower weight group from 1,750 to 2,000 gm., although not so great. Extreme variations were found in the care of infants weighing between 2,250 and 2,500 gm.

Analyses of the average daily gain in weight and of the average weight at discharge at the various hospitals disclosed little information of interest. The average daily gain in weight was related in general to the length of stay of the infant in the hospital, being greater in infants who remained longer. A weight of about 2,500 gm. was apparently the criterion used in determining the time of discharge from the hospital, the range in the actual average weight at the time of discharge being 2,460 to 2,660 gm. No relationship was demonstrated between the birth weight of the infants and the weight at the time of discharge.

The neonatal case fatality rates (deaths under 1 month per 100 live births) by broad weight groups in each of the 6 study hospitals are shown in Table 3. Since mortality varies so markedly with the weight of the infant, the crude case fatality rate in any hospital is dependent to a large extent upon the distribution of the births in that hospital by birth weight. In order

TABLE 2

Total Number of Infants Weighing 2,000–2,249 Grams at Birth, and Surviving to Discharge, with Average Number of Days' Care Received in Hospital, by Type of Care

			Per cent of Care			
			In Premature Nursery			
			In Incubator and Crib			
Hospital	Total Infants	Average Number of Days' Care	Incubator	Crib	In Crib Only	In Regular Nursery
Total	334	28	45	12	34	9
A	54	32	73	—	—	27
B	40	21	92	—	—	8
C	27	28	97	—	—	3
D	81	30	56	32	1	11
E	46	33	*	11	88	1
F	86	23	3	8	90	—

* Less than 0.5 per cent

TABLE 3

Per cent Case Fatality under 1 Month of Age among Premature Infants, 1945–1946 *

Hospitals	Total		Less than 1,500 Grams	1,500–1,999 Grams	2,000–2,499 Grams	Birth Weight Not Stated	
	Crude	Adjusted				Per cent of Total Prematures	Case Fatality
All Upstate hospitals	21.3	19.6	75.5	23.0	6.5	7.5	44.1
Non-teaching	21.4	19.5	75.7	22.8	6.3	7.7	46.0
Teaching	21.1	19.8	74.1	24.4	6.7	5.9	24.8
Study hospitals							
Upstate	23.0	19.9	75.4	23.6	6.8	—	—
A	25.9	20.2	78.4	23.1	6.7		
B	23.8	21.0	72.7	24.5	8.8		
C	21.5	15.6	63.6	20.0	3.9		
D	21.0	20.9	83.0	24.2	6 5		
New York City	18.2	15.8	66.7	17.2	4.4	—	—
E	18.6	16.5	66.7	20.3	4.5		
F	17.8	15.2	66.7	14.3	4.3		

* "Crude case fatality" includes infants whose birth weight was not stated but who were of premature gestation. The adjusted case fatality excludes them.

to obtain comparable total rates for each of the study hospitals which could then be compared with the rates for other hospitals, the rates for the 6 study hospitals were adjusted to the distribution of births by birth weight in all hospitals in the upstate area in 1945–1946. This adjustment was made by calculating the number of deaths per 100 births that would have occurred had the distribution of births by weight in each hospital been the same as that among births in all upstate hospitals.

The 2 study hospitals in New York City had definitely lower rates in each of the weight groups than did the 4 upstate hospitals combined and the difference between the adjusted total rates (21 per cent) is statistically significant. When the deaths under 1 day are excluded, the difference between the rates for the study hospitals in New York City and upstate is even greater, the rate for infants 1–29 days of age in New York City study hospitals being 36 per cent lower than in the study hospitals upstate. Hospital C upstate had rates lower than any of the 3 other upstate hospitals but, since there were only 130 premature births in this hospital in the 2 years of the study period, its rates are not significantly lower than those of the group as a whole.

The hospital with the lowest adjusted rate is hospital F in New York City. This hospital has paid particular attention to the problem of prematurity for many years. In reviewing the type of care given in this hospital, it will be recalled that all infants weighing less than 2,500 gm. at birth were admitted to the special premature nursery and kept there until discharge. In this hospital more infants are placed in incubators for a day or two and are then kept in the premature nursery when the incubator is no longer considered necessary. These infants, plus the infants placed directly in unheated cribs in the premature nursery, raise the proportion of care in unheated cribs far in excess of the other study hospitals. It is of interest that hospitals C and E, the hospitals with the next lowest adjusted rates, admitted the next highest percentages of infants up to 2,250 gm. to the premature nursery. In these hospitals, only 4 per cent of the total care to infants weighing 2,000 to 2,250 gm. at birth was given in the regular newborn nursery as compared with 12, 20, and 28 per cent in the 3 hospitals having higher rates.

It should be emphasized that no conclusion is being drawn that the differences in the types of care *per se* were

responsible for the lower neonatal case fatality rates. There are many other factors at work—above all, the quality of care rendered—which were not measured. However, in pointing out the association, it would seem that the methods employed by hospitals which save a greater proportion of infants could well serve as a model unless other methods are shown to be better in some or all respects.

For the upstate area, neonatal case fatality rates by birth weight are available for all hospitals, since infant deaths are routinely matched to their corresponding birth certificates, and birth weight is obtained on over 90 per cent of all certificates. Table 3 shows the rates for all hospital births, and also for those occurring in teaching and non-teaching hospitals. While the teaching hospitals are all fairly large (none had fewer than 900 births in 1945), tabulations have shown that except for slightly higher rates in hospitals having less than 100 births a year, there is little variation in the fatality rate according to size of hospital.

The rates in each of the 3 broad weight groups are practically the same as the corresponding rates in the upstate study hospitals, the total adjusted rate for the non-teaching group being slightly lower than for the teaching group which, in turn, is slightly lower than that of the upstate study group. None of these differences are statistically significant.

Exact comparison between the study hospitals, the teaching hospitals as a group, and others, is complicated by the fact that although birth weights are reported for over 90 per cent of all births, the group of births with weight not stated includes a considerable number of infants of premature gestation. Most of these, in view of the high correlation between gestation and birth weight, would weigh less than 2,500 gm. If these children are included in the total premature group, the mortality of the group is raised. In the non-teaching hospitals in Table 3, they formed 7.7 per cent of the total premature births, with a fatality rate of 46 per cent, and in the teaching group, 5.9 per cent, with a mortality rate of 25 per cent. If it were possible to distribute these births to the proper weight group, the total adjusted rate for the non-teaching hospitals would be increased more than that for the teaching group, probably eliminating the differences between them. In the study hospitals, birth weights were obtained from the hospital records for all prematures and this alone may account for the fact that the adjusted mortality for the upstate study hospitals appears slightly higher than for the upstate teaching hospitals as a group.

In comparing the case fatality among prematures in different hospitals, or in various areas, the inclusion of these infants with birth weight not stated is as important as the adjustment of the rates for birth weight.

For the evaluation of the results of a premature program, then, certain points must be kept in mind.

1. In comparing case fatality rates, mortality of all premature infants, regardless of the stated cause of death, must be included. The infant mortality from "premature birth" as given by statistics of infant deaths by cause is not an adequate measure of the mortality associated with premature birth. For a state, county, or city, this means the matching of infant deaths to birth certificates and obtaining accurate birth weights on all birth certificates. Birth weight has been included on the face of the Standard Certificate to be adopted in 1949. Effort must be made to obtain complete data on birth weight since the failure of some hospitals to record the birth weights of infants who die soon after birth reduces the comparability of mortality figures for these hospitals and the areas which they serve.

2. Deaths included should be those occurring in a stated age period, for example, under 1 month of age. Hospital data are likely to include all deaths occurring in the hospital, regardless of age at death, and to exclude occasional deaths at less than 1 month of age that occur after the infant has left the hospital.

3. The births should include all those occurring at a particular place during a stated period of time. Hospitals should not include infants born outside and moved to the hospital after birth. These infants have already survived the period of greatest hazard.

4. In order to be comparable, case fatality rates should be computed by birth weight groups, or the total rates adjusted for differences in the distribution of births by birth weight.

SUMMARY

1. Marked variation was found in 6 teaching hospitals in New York State in the average number of days' care given premature infants and in the type of care given those weighing 1,750 gm. or more at birth. Some hospitals placed a considerable proportion of the larger infants in the regular new-born nursery. Only 3 of the hospitals had crib facilities other than incubators in the premature nursery.

2. The 3 hospitals which made the greatest use of special facilities for premature infants had the lowest case fatality rates. There appeared to be no association between the average number of days' care and case fatality.

3. Evaluation of premature programs necessitates the development of adequate statistics on the case fatality of all premature infants, regardless of stated cause of death. Because of the marked variation of the fatality rate with birth weight, it is essential that a rate adjusted for birth weight be used in comparing case fatality rates.

Outbreak of Yellow Fever in Panama Controlled

Dr. Miguel Bustamante, Secretary General of the Pan American Sanitary Bureau, reports that no cases of yellow fever have occurred in Panama since December 31, 1948, indicating that the results of the work performed by the health authorities of Panama, with the aid of personnel and vaccine contributed through the Pan American Sanitary Bureau, by Brazil, Colombia, and the United States, were completely successful. Dr. Adhemar Paolielo, of the Pan American Sanitary Bureau, has reported from Panama that by April 15, 1949, 315,000 persons had been vaccinated against yellow fever and that most of the dwellings throughout the country had been sprayed with DDT. The teamwork among the four countries and the international health agency for the Americas was benefited by an increased budget for public health in Panama. The people of Panama provided all possible facilities and coöperation.

The Care of Premature Infants in New York City*

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THE problem of reducing the number of deaths associated with premature birth has become a matter of major concern to those interested in reducing infant mortality rates in this country. The basic problem is, of course, to increase our fundamental understanding of the causes of premature birth. But there is also the immediate problem of saving those viable infants who are born before term. Since experience has demonstrated that the lives of such babies can often be saved by proper care, an increasing number of public health officials, hospital administrators, and physicians have become interested in promoting community-wide programs for premature babies. Few reports of such activities are found in the literature and those which have appeared, have, with the exception of Chicago, dealt almost exclusively with state-wide programs.[1-5] A description of experience with the problem in another urban area would therefore seem pertinent.

Many groups in New York City have long been interested in the problems associated with prematurity. Some of the city's hospitals and medical schools have made important contributions to basic research in these problems. A city-wide committee, appointed by the Commissioner of Health, has developed desirable standards of care, kept mortality statistics, investigated hospital facilities, promoted better autopsies on the new-born. The war interrupted many of these activities, but with the EMIC program,* other activities in behalf of certain premature infants were undertaken. A study of these cases reveals some interesting material. During the war, the Department of Health also developed a hospital consultation service.

The materials herein presented attempt to answer only three of the questions usually asked by an administrator starting a so-called "premature program."

1. What is the current situation as to incidence of and mortality among prematures?
2. What are the weakest aspects of the care now given the prematurely born infant?
3. If financial assistance is to be given, what can one expect the costs to be?

MORTALITY AND MORBIDITY

Since 1939, the first year that birth weight was recorded on the birth certificate, from 7.1 to 8.3 per cent of all babies born alive have weighed less than 2,500 gm. Infant and neonatal mortality rates in New York City as else-

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* A study of EMIC and non-EMIC infants born in the war years is being made and will contain additional materials relating to the subject of infant care.

TABLE 1

Premature Births and Deaths under One Year of Age
(Known Birth Weight of Less than 2,500 Grams)
New York City — 1947

Weight Group	Births		Deaths of Premature Infants	
	Number	Per cent of Premature Births	Number	Per cent of Premature Births
Up to 999 grams	584	4.2	546	93.5
1,000–1,499 "	859	6.2	471	54.8
1,500–1,999 "	2,307	16.8	416	18.0
2,000–2,499 "	10,032	72.8	491	4.9
Total	13,782	100.0	1,924	14.0

where, have dropped steadily but the reduction in the neonatal rate has been slower. In 1947, the infant rate was 26.4, the neonatal 20.1.

MORTALITY AMONG PREMATURES

The mortality among live-born babies with a recorded birth weight of less than 2,500 gm. has fallen since 1945 from 17.1 to 14 per cent. Figures for 1947 * are shown in Table 1. The overall mortality was 14 per cent.

It is impossible to compare this figure with any other urban area, since apparently no other large city analyzes all its infant deaths in relation to birth weight. Most births (99.8 per cent) in New York City occur in hospitals, so it is of interest to compare these figures with those collected by Dunham [6] for the period 1940–1945 in 6 hospitals in large American cities, in which the per cent fatality ranged from 15 to 27.4. The figures for many reasons are not directly comparable, but they indicate that the mortality rates of prematurely born infants in New York City are certainly not excessive.

The extent to which prematurity looms as an important factor, however, is seen when one considers infant deaths in relation to birth weight. Thirty-eight per cent of all infant deaths in New York City today occur in infants with a recorded birth weight of less than 2,500 gm. The mortality rate in such infants is 13 times that of babies weighing more than 2,500 gm. "Prematurity" is listed as the chief cause of death in 38 per cent of all infant deaths, the cause of death being verified by an autopsy in 44 per cent of the cases. Potter and her associates [7] have indicated the need to evaluate carefully "prematurity," when it is listed as a cause of death on the death certificate and is not verified by an autopsy. Moreover, it is common knowledge that the autopsies usually performed on infants are so poorly done that one cannot rely too heavily on their results. Nevertheless, when all available facts are surveyed, it is quite clear that the deaths associated with premature births constitute the chief problem in infant mortality today.

WHAT CARE IS AVAILABLE

In planning a community program for prematurely born infants, among the first questions asked is "How good is the care now available?" Many assume that because of the existence of outstanding medical centers in large metropolitan areas, the care available to all infants is far above the usual standards. Our observations have not borne out this conclusion. For example,

* In 1947 there were 3,895 babies born in New York City whose birth weight was unknown. Length of gestation was known, and it was possible to allocate these babies by birth weight groups. As a result of this allocation, the corrected incidence of prematurity in 1947 was 8.6 per cent, and the corrected mortality per cent among prematurely born infants 16.7.

there are in New York City, 110 hospitals with maternity services. Of these, 20 could not meet the minimum standards set up under the EMIC program, and so could not be approved for payment when the plan was in operation. A survey (by the questionnaire method) of equipment provided in the 110 hospitals in 1946, showed that only 1 had an incubator and only 61 had a heated crib ready in the delivery room to receive the prematurely born infant. Moreover, no incubators at all were available in 19 maternity hospitals and 3 had no means (except hot water bottles or heat pads) of providing the additional heat needed by the premature. The preparation of formulae was such, in many hospitals, as to throw doubt on the safety of the product made.[8]

A team from the Department of Health, composed of obstetrician, pediatrician, epidemiologist, and public health nurse with special training in maternity and new-born care, has visited maternity hospitals regularly since 1944. They assist hospital personnel in analyzing weaknesses, and attempt to help hospitals improve their services. Surveys made by this team show that many hospitals use techniques which are outmoded, are wasteful of nursing time, or even encourage the spread of infection. Findings of these surveys and the progress made by providing competent consultant service in the nursing, pediatric, obstetric, and epidemiological fields have been reviewed elsewhere.[9]

Suffice it to point out that the problems found in hospitals lie in four areas:

1. Failure to carry out well established medical policies in a case suspected of having an infection, or the lack of consultations in complicated cases.
2. Lack of qualified supervision of nursing care.
3. Lack of physical equipment, such as incubators, and of facilities to cope with hemorrhage, shock, and asphyxia.
4. Failure to teach mothers about the care of themselves and their infants and to consider home conditions before discharging the baby.

It is the hospital with the small maternity service which not only gives a poor grade of care throughout its service, but is particularly unprepared to give modern care to prematurely born infants. But this situation is, perhaps, best revealed when one reviews findings in individual hospitals. Four typical cases have been selected. Of these, three are of the poorest type of hospital, for it is here that the chief problem lies.

Hospital "A," a small proprietary hospital, has designated a pediatrician in charge of the new-born nursery, but this designation is "on paper" because the pediatrician comes to the nursery only when called to see an individual baby in consultation with, and at the request of, the attending physician. He has no other responsibilities, nor can he assume any. As there are no definite policies indicating when he should be called, such requests are indeed rare. There are no established policies and procedures, no written standing orders to guide physician or nurse. Each physician orders for his own babies. The premature infants are fed with the routine house formulae prescribed for the full-term infants. On one visit to the nursery, in which the maximum capacity had been set at 20, 22 full-term and 6 premature infants were found packed in, with scarcely room for doctor or nurse to observe a baby. There had been no increase in the "nursing" staff to care for the additional 8 babies. There was no trained nursing supervisor for the nursery. Most of the nursing care was supplied by untrained staff members, practical nurses, attendants and aides who were not registered nurses, and who, it must be remembered, were working without supervision. There were, at the most, 2 so-called "nurses" and sometimes only 1, for this entire group of 22 full-term and 6 premature babies. Premature babies are fed with propped bot-

tles, and gavage tubes are passed by poorly trained personnel. The one incubator available in the nursery presumably has its temperature checked at intervals, but this information is never recorded so that no one knows what the previous temperature has been. All infants, both premature and full-term have their temperature taken "routinely" once a day, regardless of condition. Mothers are not taught how to care for the babies when they are ready to go home. No attention is paid to home conditions. Arrangements with the community nursing agency so that the premature infant would be protected in the home, if it were able to survive this type of hospital care, could have been made. Transfer of a premature infant to a hospital better able to care for it is effected only if the baby is about to die, the purpose apparently being to avoid having the death recorded as occurring in this hospital. Records on all babies, including prematures, are practically nonexistent. The record form for the infant has no space for progress notes, physical examinations, consultation notes, laboratory data. The only information available is the temperature and the weight, which are recorded every two days. No record is made of feeding, symptoms of illness, or behavior.

Hospital "B" is almost a replica of Hospital "A." On a visit to Hospital "B" a 3 pound premature infant, born 12 hours previously, was found in a private room. No physician had seen the baby since birth. A private duty nurse, an elderly woman who had just recently returned to nursing, was employed to care for the baby. Since she had not seen a premature baby in years, she was standing around the room not knowing what to do. This baby died during the visit of the Health Department's consultants to the hospital.

In Hospital "C," care of premature infants is equally substandard. Premature infants are cared for in the full-term nursery in the same manner as full-term babies. There is no trained nursing staff at any time during the day or night. The 1 untrained worker provided for the nursery also spends about 2 hours in the formula room preparing formulae, during which time the nursery is completely uncovered. Premature babies are fed with propped bottles, as are full-term babies. As a typical example of the kind of care given in such a hospital, for a 5 day period, the temperature of 1 small premature infant weighing 3 pounds 8 ounces at birth, was never taken. The infant was in an incubator, but the temperature of the incubator was never checked or recorded. The baby was not seen by a pediatrician until a week after birth, when its condition became critical. A review of the baby's record during the 13 days it survived, revealed no report of any physical examination at any time or any progress notes by any physician. Certainly a baby of this weight, which was in sufficiently good state to survive 13 days under these conditions, could probably have lived on, had adequate care been continuously available.

In contrast to these three illustrations of substandard care, Hospital "D" is an example of the type of care which should be available to all premature infants.

There is an excellent pediatric staff responsible for all procedures in the premature unit. There is, too, a well supervised house staff. Medical policies are based on scientific investigation, and the procedures are well carried out. There are daily rounds made by the attending pediatrician, as well as weekly teaching rounds. The quality of the staff is attested by the fact that even physicians of good standing prefer to give up the care of their patients to the trained pediatric staff available. Annual statistics of the premature unit are kept, and are used as a guide in an effort to improve care. These statistics, incidentally,

bear out the impression that excellent care is given to premature infants. A manual on the care of the premature infants has been developed as a guide for both physicians and nurses. The nursing staff is under the supervision of a nurse who has had considerable training and experience in the field of pediatric nursing. Although this hospital has been affected, as have all hospitals, by the current nursing shortage, it has, nevertheless, been possible by wise allocation of duties to provide sufficient nursing care through the use of auxiliary workers who are not nurses. Emphasis is placed on having *good* supervision and on special training for all those who work with the premature. The premature unit is self-contained, almost completely segregated from other services of the hospital. Considerable space has been allocated so that there is no overcrowding. There is sufficient utility, work, and storage space. Premature infants are held or supported when fed, and bottles are never "propped." When gavage tubes are used, they are introduced by experienced pediatricians and nurses or by auxilliary personnel under close supervision. Recording of the infant's reactions and feeding is done carefully and intelligent use made of the information so recorded. Mothers are taught how to care for their premature babies, so that they have a feeling of security and competence when they finally take them home. The hospital also uses another method to maintain a close relationship with the parents. Each evening, the resident physician in the premature unit has office hours, so that parents may confer with him in person or by telephone. There is, too, an excellent working relationship with the community nursing service; home conditions are investigated prior to the discharge of the baby, and the public health nurse actually helps with the care of the baby in the home. The hospital reports a smaller number of readmissions since this system has been in use.

COST OF CARE

It is well recognized that care of the premature baby is costly—careful nursing, oxygen, transfusions, etc., are items which add appreciably to the cost of care. Actual cost figures indicate that $18 per hospital day (as of April, 1948) is not exorbitant, that cost varies widely from hospital to hospital, and that costs are mounting rapidly. Nevertheless, the administrator needs to know what doctors and hospitals can be expected to request in caring for prematurely born infants. An analysis has been made of the cost of caring for 378 infants under the EMIC program in New York City in 1943, 1944, and 1945. In the group were 353 infants weighing less than 2,500 gm. and 25 who weighed more but were declared "premature" by the physicians who cared for them and for whom special service was requested, given, and paid for. These 25 are included in the cost figures because it is believed that care for such babies (i.e., debilitated or "immature" infants slightly over 2,500 gm.) will usually be asked for.

CONDITIONS OF PAYMENT

In order to interpret the data, it is necessary to know the pertinent facts relating to payments allowed. Hospital care was paid for on a cost basis and varied from hospital to hospital. During the period covered by this report, the average cost was approximately $8 a day, with a ceiling set at $8.25 so that more than this could not be paid. Hospital care of a new-born infant was paid by EMIC only after the mother was discharged. Since the average length of hospital stay of the EMIC maternity patient in New York City was 9.8 days, an additional maximum of 9.8 days' cost should be added in order to calculate payments made for hospital care for EMIC premature infants. This fact

TABLE 2

Payments Made for Care of Premature Infants by EMIC Program, New York City, 1943–1945

Type of Service Paid for	All Prematures		Prematures Who Survived		Prematures Who Died	
	Amount of Money	Per cent of Total	Amount of Money	Per cent of Total	Amount of Money	Per cent of Total
Hospital *	$64,011.34	80.0	$61,276.64	80.1	$2,734.70	74.3
Attending Physician †	5,084.00	6.3	4,902.00	6.4	182.00	4.9
Consultant	2,572.00	3.2	2,376.00	3.1	196.00	5.3
Private Nurses	6,422.50	8.0	6,214.50	8.1	208.00	5.4
Visiting Nurses	150.50	0.2	150.50	0.2	....	...
Oxygen	1,158.30	1.4	1,020.30	1.3	138.00	3.8
Blood and Plasma	385.80	0.4	249.50	0.3	136.30	3.8
Breast Milk	338.58	0.4	267.03	0.4	71.55	1.9
Ambulance and Drugs	45.00	0.1	33.40	0.1	11.60	0.6
Totals	$80,168.02	100.0	$76,489.87	100.0	$3,678.15	100.0
Average cost per case	$212.09		$217.30		$141.47	

* Includes cost of all hospital care, exclusive of the first 10 days of life except for those infants who were transferred from one hospital to another.

† Includes cost of all attending physician care, exclusive of the first 14 days of life.

does not apply to the EMIC premature infants who were transferred from one hospital to another, or for those who died.

Payment to the attending physician also requires interpretation. Under the regulations of the EMIC program in existence during the period covered by this report, the physician who delivered the mother was not paid additionally for the care of the new-born infant during the first 2 weeks of life. Therefore, in calculating true costs of paying for medical care, for the premature infant only, allowance would probably have to be made for additional payment to cover this early period. EMIC fees paid to the attending physician were $3 for a home visit; $2 for an office or hospital visit; for long-standing care the fee was $24 for a 3 week period, and $6 for each additional week. After December 15, 1944, diplomates of the American Board of Pediatrics were paid fees 50 per cent higher than those quoted.

Since prematurity was considered a condition requiring special care, pediatric consultation was strongly urged for all premature infants. Payment to qualified consultants was made from birth on at the following rates: $15 for the first home visit and $10 for each visit thereafter; $10 for the first office or hospital visit and $5 for each visit thereafter. Practically all consultation care for this group of EMIC premature infants was given in the hospital. Consultants were considered "qualified" if they were certified by specialty boards or had training and experience equal to that required for entrance to Board examinations.

It should be emphasized that the amount of service required—medical, hospital, nursing, consultation, and the miscellaneous types—was decided by the physician rendering care to the individual patient. Presumably, therefore, the amount of care given to this group of EMIC patients was determined only by the medical condition and needs of the individual patient.

OVERALL COSTS

A total of $80,168.02 was expended for all types of care rendered to this group of 378 infants, or an average cost of $212.09 per infant. A more detailed analysis of the cost is presented in Table 2.

Table 2 shows that the great bulk of funds (80 per cent) was spent for hospital care, with approximately 10 per cent more for medical care, and 8 per

TABLE 3

Amount Paid for Supplementary Services Given Premature Infants, EMIC Program, New York City, 1945–1946

Service	No. of Cases in Which Care Was Paid	Per cent Infants Receiving Care	Aver. Paid per Case	Range of Pay
Private Nurse	16	4.2	$16.99	0–$1,705.00
Visiting Nurse	42	11.0	0.39	0– 15.00
Oxygen	18	5.0	3.07	0– 420.00
Blood and Plasma	20	5.0	1.02	0– 50.00
Breast Milk	9	2.0	0.89	0– 82.62
Ambulance	3	1.0	10.00	None
Special Drugs	4	1.0	15.00	None

cent for nursing care. The average cost per case of the group who survived was $217.30 as compared with $141.47 for the group who died. These figures are probably high, since this particular series of infants contains relatively few premature infants who died within the first few hours of life.

Hospital care was paid for 368 of this series of 378 infants at an average of $169.34 per case. There was a range from "no payment" to $900. Payment to the attending physician was made for 165 of this series. Of the remaining 213 infants, 204 were ward cases in which no individual physician was paid. There was a range from "no payment" to $228 per case with an average of $30.81 paid per "non-ward" case.

Payment for consultant service so that the general practitioner could benefit from the greater experience of the qualified pediatrician was encouraged. In many instances individual attending physicians were called and this service offered. It was used in only 17 per cent (65 out of 378) of the 378 cases, but as pointed out below, a considerable number of these infants were ward patients who were already under the care of pediatricians so that special consultation was not indicated. Payments for consulting pediatricians for the entire group averaged $6.80 per case with a range from "no payment" to $195. For those babies for whom service was provided, the average amount paid was $39.57.

These figures, however, do not give a complete picture of the amount of pediatric care that the EMIC premature received. Of the 26 premature infants who died, 14 were cared for by a pediatrician and 12 were ward patients. Therefore, presumably, all infants who died were seen by a pediatrician. Of the 352 premature infants who survived, 78 were seen by a pediatrician and 168 were ward patients. This then makes a total of 246 or 67 per cent of those prematurely born infants surviving who were seen by a pediatrician.

The average and range paid for other supplementary services are seen in Table 3. It is interesting that only a small number of cases received such supplementary services.

Visiting nurse agencies did not charge for routine visits made as part of the community-wide program of visiting newly born infants. Of the 42 cases paid for, an average of only 2.4 visits were made per case. The one special medication paid for by EMIC for this group was penicillin.

The cost of these services, exclusive of special nurses which became more important under wartime conditions, was thus very small. It seems doubtful if these special services added enough to the income of the hospitals to compensate for the work entailed in securing approval for payment. Nevertheless, the fact that payment could be made did much to improve relationships with physicians, families, and hospital administrators and in some instances was important for infants' welfare.

TABLE 4

Average Length of Hospital Stay of EMIC Premature Infants by Birth Weight Groups, New York City, 1943–1945

Weight Group	Totals			Infants Who Survived			Infants Who Died		
	Number of Infants	Number of Hospital Days	Average Length of Hospital Stay	Number of Infants	Number of Hospital Days *	Average Length of Hospital Stay	Number of Infants	Number of Hospital Days †	Average Length of Hospital Stay
Under 1,000 grams	5	180.6	36.1	2	175.6	87.8	3	5	1.6
1,000–1,499 "	42	1,995.0	47.5	29	1,677.2	57.8	13	317.8	24.4
1,500–1,999 "	134	5,267.0	39.3	129	5,166.2	40.0	5	100.8	20.2
2,000–2,500 "	172	4,457.0	25.9	167	4,341.6	26.0	5	115.4	23.1
Over 2,500 "	25	610.0	24.0	25	610.0	24.0	..	..	..
Totals	378	12,509.6	33.1	352	11,970.6	34.0	26	539.0	20.7

* The above figures were estimated by adding 9.8 days to the number of days paid for in the cases of infants who survived.

† Estimates of length of stay of infants who died were based on the number of days paid for and age at death.

LENGTH OF STAY IN THE HOSPITAL

The length of time that the baby will have to stay in the hospital is an important factor in determining the cost of his care. Under the EMIC program, the medical status of the infant was supposedly the only factor determining the amount of hospital care needed, since the financial question did not arise. The average length of hospital stay of the 352 prematurely born infants in this study who survived was 34.0 days and of the 26 infants who died 20.7 days.[10] It must be remembered that many prematures who died within the first few hours were not included in the calculation of length of stay. Further data on the length of stay by birth weight group are presented in Table 4.

It is seen that in the series of infants who survived, the group weighing less than 1,000 gm. remained in the hospital approximately 3 months; the group weighing 1,000–1,499 gm. approximately 2 months; the group weighing 1,500–1,999 gm., 1½ months; and the group 2,000–2,500 gm., approximately 3½ weeks. The group who died represents such a small sample, that no valid conclusions may be drawn regarding length of stay.

AMOUNT OF TRANSPORTATION

In planning a community program for the care of prematurely born infants, the administrator must have some estimate of the expected amount of transportation of infants from one hospital to another or from the home to a hospital. In this EMIC series, 24 per cent of the premature infants who died and 6 per cent of those who survived, or 7 per cent of the total group, were known definitely to have been transported.

In another study of premature infants who died in New York City in 1946, it was found that 19 per cent of the prematures in this other series were transferred.

SUMMARY

1. Some of the problems facing those interested in reducing the number of infant deaths associated with premature birth are presented, using factual materials collected in New York City during the past three years. The emphasis is placed on those which are of interest to the administrator who may wish to plan a special program of care for the prematurely born infant.

2. In 1947, 14 per cent of the babies with a recorded birth weight of less than 2,500 gm. died in the first year of life. Deaths of these babies accounted for 38 per cent of all infant deaths, and the mortality rate in the prematurely born group was 13 times that of babies weighing more than 2,500 gm.

3. Surveys of all hospitals showed a wide variation in the kind of care given. There was great need for improvement, particularly in the hospital with a small maternity service.

4. Studies of payments made under the EMIC plan for prematurely born infants show an average cost of $217.30 a case for those who survived, and $141.47 for those who died.

5. The average length of hospital stay of the premature who survived in this series was approximately 30 days. All of those who died and two-thirds of those who survived were seen by a pediatrician.

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Passano Award to Dr. Avery

Oswald T. Avery, M.D., Emeritus Member of the Rockefeller Institute for Medical Research, received the 1949 Passano Foundation Award of $5,000 at the annual award dinner in Atlantic City on June 8, during the annual meeting of the American Medical Association. The award goes to Dr. Avery for his extensive investigations of the pneumococci, their classification, analysis and immunological relationships. Dr. Avery was one of the five A.P.H.A. Lasker Award winners in 1947 "for studies on the antigenic constitution of bacteria." He is a member of the Association.

The Passano Foundation, established by Williams & Wilkins Company, medical publishers, Baltimore, to aid advancement of medical research, has previously made other awards to E. J. Cohn, Ph.D., Harvard University, for his work on fractionation of blood; Ernest Goodpasture, M.D., Vanderbilt University, for virus culture by chick embryo method; Selman Waksman, Ph.D., of Rutgers University, for discovery of streptomycin; and last year a joint award to Helen B. Taussig, M.D., and Alfred Blalock, M.D., both of Johns Hopkins University Medical School, for "the blue baby operation."

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THE Rochester Child Health Institute, which from its start in 1944 until its incorporation this year was called the Rochester Child Health Project, has as its concern the physical and mental health of all the children of Rochester, Minn., a city of 33,000. It does not function as a self-contained institution, nor are its basic aims very original. Many of the services to which its staff contributes are not new to Rochester. There were well baby and well child clinics before; there was a nursery school before. Most of the services to which it contributes are actually under other auspices: the Rochester and Olmsted County Health Unit, the well child conferences of the Mayo Clinic, the section on obstetrics and gynecology of the Mayo Clinic, and the public and parochial schools. Even its staff is largely borrowed from other institutions: pediatricians and psychiatrists from the staff of the Mayo Clinic, fellows in pediatrics and psychiatry from the Mayo Foundation, and public health nurses from the Rochester and Olmsted County Health Unit and the University of Minnesota.

What is it then? Basically it is a focal point which draws together agencies, individuals, and points of view in the field of child health, and then tries to bring them to bear on the children through available activities. When staff and facilities are not available or not sufficient elsewhere the Institute itself may supply them. That is why it has 3 psychologists, 1 full-time and 1 half-time pediatrician, a nutritionist, and a nursery school supervisor who are its very own, not loaned by anyone else. It also has some secretaries and statistical workers. It has some small offices of its own. In one respect its situation is unusual. There are only two private practitioners of medicine in Rochester who are not connected with the Mayo Clinic, and neither of them is a pediatrician. Therefore the Institute has the field of preventive pediatrics and psychiatry almost entirely to itself.

Dr. Henry Helmholz, for many years head of the section on pediatrics at the Mayo Clinic, conceived the idea, won the medical backing of the clinic, and the financial backing of the Mayo Association, and persuaded Dr. C. A. Aldrich who had pioneered in the fields of mental hygiene and child development within the field of pediatrics, to become director. The Mayo Association provided the entire financial support until this year, when the Institute was incorporated in order to appeal for the additional funds necessary if it is to fulfil its broad aims.

Prenatal care is carried out in two clinics: those of the sections on obstetrics and gynecology of the Mayo Clinic and the Rochester and Olmsted

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County Health Unit in the city hall. The latter is staffed by public health nurses, the Institute nutritionist, and fellows in obstetrics from the Mayo Foundation, supervised by a Mayo Clinic staff consultant. Prenatal classes for expectant parents have been tried a few times in the past with only moderate success. We want to try again when we have more staff and more wisdom. A few obvious cases of emotional disturbance in pregnancy are referred to psychiatry in the Institute, but we do not yet have the staff which we want for the routine psychiatric evaluation of all prenatal patients.

Practically all Rochester babies are born, at the rate of about 600 a year, in St. Marys Hospital, which is staffed medically by the Mayo Clinic and Foundation. A member of the section on pediatrics of the Mayo Clinic who is also on the staff of the Institute is in charge of the new-born nurseries, and he and a fellow in pediatrics make rounds to see all the mothers daily. This is the first contact between the mother and the Institute staff proper. A family history is taken. The Institute philosophy, with its emphasis on respect for the child's own developmental pattern, self-regulation of diet and schedule, and value of breast feeding, is gotten across through casual conversation on rounds, through the fellow's longer individual talks with each mother, and through printed leaflets, 3 of which are given during the 8 day lying-in period.

Within a couple of days of going home a public health nurse makes a home visit.

The babies return to the well baby clinics at monthly intervals during the 1st year, five times the 2nd year, and twice the 3rd, 4th, and 5th years. There are two clinics, the largest run by the Rochester and Olmsted County Health Unit at the city hall six half days a week and staffed by an Institute pediatrician, Mayo Foundation fellows in pediatrics, and the public health nurses. A smaller clinic for private patients, which meets five afternoons a week at St. Marys Hospital, is similarly staffed except that the pediatrician is a member of the section on pediatrics of the Mayo Clinic.

Again, the emphasis in the doctor-parent conference and in the leaflets, which are different for each age period, is on what to expect at each developmental stage and how to adjust to it. Dr. Leona Baumgartner of the New York City Health Department, who visited the Institute recently, said jokingly that in the usual well baby clinic you see the doctor talking and the mother nodding, but that in Rochester the mother is talking and the doctor nodding.

Medical examinations are given all children before they enter kindergarten or the 1st grade, and also during the 5th grade, 9th grade, and 12th grade. In addition, children in other grades are examined if they have had previous lesions or if examination is requested by the teacher, parent, or public health nurse. The examinations are unusually careful as school examinations go, being scheduled at the rate of one every twenty minutes. The parent is invited to be present (for children under high school age), the public health nurse is present, and the teacher is available. The referrals are pediatric, dental, and psychiatric.

The public health nurses are distributed predominantly on a geographic basis so that a family has the same familiar nurse whether at the well baby clinic, a school health examination, or a sick call.

There is a wise nutritionist on the staff of the Institute who consults in the prenatal clinics and the well baby clinics, works with the teachers in the schools and takes referrals generally from the public health nurses.

At present there are three nursery schools in Rochester for 115 three year and four year olds, organized by a citizens' committee and supervised by an expert from the Institute. Tuition is paid in full or part by parents but some scholarships are provided by service clubs. There is a total of five sessions a day, with two paid teachers for each session. Two of the nursery schools are located in public school buildings through the courtesy of the school board, but there is no other official connection with the public school system. There is also a nursery school run by the Catholic parochial school which the Institute nursery school supervisor advises.

The psychiatric staff of the Institute consists of a half-time pediatrician with psychiatric training, a part-time psychoanalytic psychiatrist who supervises the direct psychotherapy of children, and three Mayo Foundation fellows in pediatrics and psychiatry. There are referrals of early problems from the well baby clinics, from the schools, from the public health nurses, from the psychologists of the Institute, and from parents directly. Once a week there is a psychiatric case conference in one of the schools, at which a problem child is discussed from the points of view of teacher, public health nurse, and pediatrician. The emphasis is as much on community management as on psychotherapy, as much on prophylaxis as on treatment.

Mental Health Act funds now are available to the Rochester and Olmsted County Health Unit for a small counseling clinic for adults and children. It will have a psychiatrist-administrator and a well trained psychiatric social worker to start with. When it is actually set up, the psychiatric staff of the Institute will function as part of its staff in respect to cases which require any appreciable length or intensity of psychotherapy. The simpler problems of the early childhood years, which mainly require advice to parents, will be handled in the pediatric setting in the well baby clinics, whenever possible by the fellows in pediatrics, under psychiatric supervision.

The psychologic staff consists of three experienced people who at present are concentrating on a fairly thorough evaluation of all the children as they reach the age of 2½ years. There are three aspects to this evaluation: a Stanford-Binet test, a determination of the child's present adjustment in such areas as feeding, toilet training, sleeping, discipline and sociability, and a discussion with the parent. In the latter, the child is not compared with other children but is interpreted in terms of his individual needs.

Plans are being made to repeat the psychologic evaluation as each child reaches the age of 5 years. These cross-sectional estimations at 2½ and 5 years are only a more thorough addition to the developmental and adjustment data secured at every pediatric visit. They have already shown, however, the inaccuracies and the omissions in the routine questioning of the less experienced fellows in pediatrics. They have shown also, even in a community where psychiatric and psychologic advice is freely available, that for every parent who has spontaneously sought help for a problem such as toilet training resistance, there are several who have struggled along without mentioning it.

Another plan in the psychologic field is to ask each school teacher to evaluate each of her pupils each year on an adjustment questionnaire which we have prepared. This will help us to keep track of the children's development in the school years when the pediatric contacts are infrequent and will, incidentally, help the teachers form better estimates of their pupils.

The Rochester Child Health Institute

has so far worked successfully in a number of directions. The pediatric supervision of all the children of the city is good especially in the preschool years. The percentage of kept appointments for routine check-up is impressive. The philosophy of respect for the child's individual developmental pattern really seems to get across to the majority of parents. I think it shows, for instance, in the striking infrequency of feeding problems. As a newcomer in Rochester, one is impressed by the relaxed, friendly, accepting attitude of most mothers in the clinics. The value of healthy emotional development is recognized by staff, fellows in training, and parents. The desire for nursery school facilities keeps increasing. Some of the individual psychologic problems in children are being helped and the staff is learning how to detect them, how to prevent them, and how to treat them. All these gains will be applicable elsewhere. But we all feel that we have made only a beginning.

We are aware of the lack of continuity in guidance between pediatric visits and between psychiatric visits. The public health nurses in their present numbers are too few to follow up all the problems between visits. The small departments of city and county welfare have their hands full with the more severe social problems.

There is much fundamental research to be done concerning normal development, both physical and emotional, and the interrelationships between the two. What part do inborn temperament, parental attitudes, and place in the family play in developmental patterns? Can inappropriate parental attitudes be changed before the child is born by methods that have a wide application? What part is to be played in the future by pediatrician, public health nurse, psychologist, social worker, nursery school and grade school teacher, and psychiatrist in guiding children's all-round development? We all know how individual children have been helped, but we certainly have not yet worked out a blueprint for using all the professional resources of the community for all the children. How far can pediatricians be helpful in preventive psychiatry? Should a corps of guidance psychologists or psychiatric social workers be trained to take up where the pediatrician leaves off? Can the values of nursery schools for children and their parents be spread thinner over more of the community?

We want to experiment with guidance nurseries for the flexible use of a large number of children and parents with no registration and no preconceived duration of attendance. We want to experiment with itinerant nursery school teachers who will move from neighborhood to neighborhood, showing children how to have fun with each other, and showing parents how to get along with their children near home or in it. We have got to experiment for decades with different approaches to parent education, going back at least far enough to reach the future parents when they are in high school. We have hardly begun to make contact with all the other organizations, from the city council and the Young Womens Christian Association to the Kiwanians and the real estate board, who do not think of themselves as child care agencies but are influencing children nonetheless.

I would like a chance to make another progress report on the problem in 25 years.

Relation of Nutrition to Infection in Children*

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THE topic "The Relation of Nutrition to Infection in Children" [1, 2] is one that has long intrigued the minds of many interested observers. The present study consists of clinical observations, only, on a group of 315 children followed for periods of 3 to 32 months in an outpatient department.

Before presenting the specific data it may be helpful to recall some of the facts of body metabolism as revealed by recent studies in other fields. Rudolf Schoenheimer,[3] by the use of radioactive carbon, hydrogen, etc., was able to trace the pathway of food substances in the body. By this means, a new tool for metabolic research has been provided, and as a result, a dynamic concept of the interchange of foodstuffs is now accepted, in which even the constituents of bone [4] are shown to be constantly used and renewed.

Remarkable strides are being made in the study of all phases of the body's metabolism by the use of this tool of radioactive isotopes. One of the most revealing of recent investigations is the demonstration that the metabolism of body fat [5] uses virtually the same enzyme systems known to be used in the splitting of sugars. This discovery is a most important contribution to the understanding of the *common pathway* [6, 7] used by the body when obtaining energy from basic foodstuffs.[8] Though proteins [9–12] may be used as an energy source their more important use is to replace worn out and destroyed protoplasm. Fats [13] serve in several capacities, being used chiefly by the nervous system and for protective and insulative purposes as well as an excellent source of energy. Additionally, minerals [14, 15] and vitamins [16–18] are equally essential for life.

METHOD

Children, ages 2 to 17, were sent, chiefly by city and, in part, by county health department nurses, from schools of a metropolitan city area following screening by teachers, to the outpatient department of a philanthropic health organization—The Mott Foundation Children's Health Center—where diagnosis was made. Children chosen had to show either some form of chronic infection or a faulty nutritive status or both. Of the 315 cases seen, all but 11, or 96.5 per cent, had some form of chronic infection present. The children came from medically indigent families only.

Observation was made in each case over periods that varied from 3 to 32 months. At least 2, and usually 4 to 5, visits were made per patient to the outpatient department. Such visits were most frequently at 1 to 2 month intervals. Careful history and physical medical examinations were performed on each child with laboratory work as indicated to establish the diagnosis. The

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assistance of a dental department, an ophthalmologist and an otolaryngologist was also available. Medical advice and treatment was given according to the nature of the illness found, but in all cases some form of supplemental therapy was administered consisting of vitamins ABCD, with iron and liver additionally, where it was considered essential. Sulfadiazine or penicillin was administered also when more acute illnesses supervened.

FINDINGS

An exceptionally poor nutritional status or an infection of greater than usual severity occurred 63 times or in 20 per cent of all cases. Multiple conditions were seen to be the rule, with 85.8 per cent of all patients presenting 2–5 different diagnoses at the same time on the first visit.

Diseased tonsils led the list and were found in 72 per cent of all cases. Involvement of the upper anterior cervical lymph nodes was second and was found in 67.3 per cent of all cases.

A faulty nutritive status, as determined by clinical observation alone, made up 125 out of 315 cases, or accounted for 39.5 per cent of cases seen. Such nutritional defects included marked thinness, definitely poor muscle tone, rough skin, dry hair, increased scleral vascular injection, undue prominence of papillae of tongue, redness or magenta discoloration of tongue, fissures at angles of mouth, gingivitis not associated with dental causes, extreme nervousness for which no other cause could be assigned, and evident pellagra, rickets, or other fully developed faulty nutritional status. However, it should be remarked that fully developed cases of clinical malnutrition and avitaminosis were but seldom encountered.

In children, the commonest statement made in complaint by the mothers concerning the child when questioned was that the appetite was poor. The next most common complaint was the observation that the child was nervous.

The one procedure that was somewhat routine, when indicated, was tonsillectomy and adenoidectomy. However, the T and A's purposefully were delayed to see what remedial effect supplemental therapy would have. The total of 315 cases were divided into 3 groups. Group I of 227 cases, or 75.27 per cent, had no T and A's performed. Group II of 32 cases, or 10.47 per cent, had T and A's at the *end* of their period of observation, while Group III of 56 cases, or 14.26 per cent, had T and A's *during* their period of observation. In Group I, consisting of 227 children, 139 were considered to need T and A's when first seen. This was based on evidence of real infection or marked hyperplasia of the tonsils or adenoids or both. All 227 in Group I, however, were started immediately on supplemental therapy, along with such other immediate medical treatments as were deemed essential. At the end of their period of observation, 3 to 32 months, all but 6 of the 139 had improved to a point where no T and A's were needed.

There were in all a total of 1,058 diagnoses rendered. Of these, 696, or 65.7 per cent, pertained to infections, and 177 diagnoses, or 16.7 per cent, to some defect in the nutritional status, irrespective of defective teeth and its possible nutritional connections. Thus, infections and nutritional defects together accounted for 82.4 per cent of diagnoses recorded. In all, 59 different diagnostic headings were used. Infections accounted for 31 of these headings and nutritional disturbances for 10 of them, or together for a total of 41 out of 59 diagnostic headings.

The sexes are about evenly distributed, 156 being boys and 159 girls. The greatest number of individuals seen were in the age range 5 to 12 years inclusive, while ages 5 and 6 years accounted for the greatest numbers, be-

ing 46 and 44 persons respectively.

Weight gains were quite variable. Losses were present in 3 per cent; no gains in 6 per cent with ½ to 5 pound gain in 53 per cent, while 5½ or more pounds gain was made by 38 per cent of all children seen. High gains of 15–32 pounds were made by 5.7 per cent. Thus gains of some kind were present in 91 per cent of all children seen.

COMMENT

It is felt that the frequency of serious past illnesses [19,20] is important and here it is found that pertussis [21–23] heads the list, being practically 3 times as frequent as the next most frequent past illness, which is pneumonia. Pertussis is a far more serious illness than it is often given credit for. It is the cause, not only of the highest mortality found today among the communicable diseases of children, but it is also a precursor of chronic illness of such frequency as to merit close attention. Rheumatic fever, otitis media, scarlet fever, and measles as past illnesses occurred in a decreasing order of frequency, with only a scattering for all other causes.

SUMMARY OF RESULTS

Supplementation, consisting of vitamins A–D, B-Complex and C with, in some cases, iron and liver additionally, was administered to 315 children for periods of 3 to 32 months. Three hundred and four out of the total of 315 cases had some form of chronic infection present. In this group of 304 cases, improvement was noted in all the types of infections found, as well as an improvement in the nutritional status, excepting only 11 cases, 10 being not improved, and one being worse. Thus, only 3.6 per cent of the total seen were not better following 3 months or more of the supplemental therapy. Or, in other words, of 304 cases, 293 or 96.4 per cent were better.

In addition to a lessening of the infection and the poor nutritional status, improvement was frequently seen in several other ways; namely, (1) a better appetite, (2) an increased growth, (3) an improvement in school work, and (4) a better attitude and behavior pattern.

An analysis of the results showed that 72.0 per cent of all cases fitted into the top three brackets of results—well, very much better, and much better on a 3 month minimum time period, while 85 per cent fitted into the same top three brackets on a 10 month minimum period of treatment and observation. This then shows 13 per cent better results for the longer minimum observation and treatment period than for the shorter.

Groups I and II together consist of those cases having supplementation *only* during the period of observation. Here, the longer 10 month minimum period for supplementation increased the good results in the top three brackets from a total of 69.7 per cent to a total of 82.9 per cent, or an increase of 13.2 per cent for the longer minimum period.

Group III, which is supplementation *plus* T & A performed during the period of observation, showed an overall better result than for supplementation alone. This held respectively for the 3 and 10 month periods of observation showing 82.2 per cent and 90.0 per cent of good results in the top three brackets respectively for the 3 and 10 month minimum periods. Thus, for Group III the 10 month minimum period showed approximately 7.8 per cent more good results in the top three brackets than did the 3 month minimum period.

CONCLUSION

Supplementation alone, for a 10 month minimum period of observation and treatment, showed 82.9 per cent of children well, very much improved, or much improved. Where T & A's seemed indicated and were done additionally to supplementation, 90 per cent of all children so cared for fitted into the same category of well, very much improved, and much improved. While the numbers of children seen are not many, the trend, it is felt, is quite significant. It is felt, therefore, that when dietary supplementation is administered to all cases of chronic infection, for a proper length of time, there is produced, in a large majority of such children, a very real and significant reduction not only in the infections and poor nutritional status found, but also in other retardations so commonly present.

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Large U. S. Fund For "Backward" Areas in Prospect

According to a press notice in the *New York Times* of May 15, it is believed that from 10 to 15 per cent of the funds sought for the world task of aiding backward areas, in accordance with point 4 of President Truman's State of the Union message last January, recommending aid to such areas, would be spent in each of the fields of health, education, and agriculture. The remainder of the fund would presumably go to development, through technical advice and otherwise, of such projects as roads and transport, flood control, power development, mineral and oil exploration, fisheries, and industrial development.

Officials of the Department of State pointed out that, although the needs of the under-developed parts of the world are tremendous, the possibilities for spending funds are not. Because the program deals with technical assistance chiefly it must be keyed to available trained man power.

The State Department has come to an increasing realization that the real limit to progress and expense is the number of scientists and technicians available to do the job.

Of the total of $105,000,000 expected, $30,000,000 would be asked in a new appropriation by the United States Congress and $20,000,000 in appropriations. It has already been asked to contribute to certain United Nations agencies along similar lines and to the Institute for Inter American Affairs; $18,000,000 would be expected from Britain, Canada, France, and, perhaps other countries; $37,000,000 would come in local currencies of the countries being aided. While the new program would take over and correlate similar assistance which is already being carried out through the Institute of Inter American Affairs, it would not be involved with the technical assistance program of the Economic Coöperation Administration. The latter agency is seeking $16,000,000 for technical assistance in the Marshall Plan countries but for a different purpose because a more immediate contribution to European Recovery is being sought.

Influence of Protein Nutrition on Experimental Infection*

Physiological Aspects

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THE study here reported suggests that several differing forms of infection response in the experimental animal may remain adequate in the presence of severe protein deficiency. The extensive investigations reported from Cannon's Laboratory[1-9] favored a contrary infection-diet hypothesis—namely, that cellular defensive response such as antibody elaboration would be inadequate or defective in the protein deficient animal. This hypothesis is a natural outgrowth of the work of numerous groups of investigators. Schoenheimer, *et al.*[10] showed that the body proteins composing various tissues were constantly undergoing a degradation and resynthesis—were, in fact, in a state of dynamic equilibrium. Modification of physical chemical techniques, particularly the Tiselius modification of the electrophoresis of protein containing solutions,[11] resulted in more specific description of human plasma components. Among these was listed a globulin which moved more slowly than the two other distinct components he named in the electrophoretic field, hence was called gamma globulin. This substance has been isolated in Cohn's laboratory,[12] and constitutes about 10 per cent of the total plasma protein.[13] Enders demonstrated that a great many of the antibodies to certain infectious processes were to be found greatly, if not exclusively, concentrated in this fraction.[14] Kabat, however, pointed out that all antibodies were not gamma globulin, nor was all gamma globulin antibody.[15] White and others demonstrated that gamma globulin was apparently formed within lymphoid tissue and could be released into the systemic circulation by appropriate stimulation.[16] Since all cells are composed of protein containing protoplasm, Cannon's hypothesis that protein deficiency would seriously imperil antibody response has seemed eminently reasonable. The assumption of causal relationship between hunger, famine, and infection gained impetus from epidemiologic studies in Europe during the war of 1914–1918. The increased mortality—from tuberculosis particularly—was ascribed to nutritional deficiencies resulting from deprivation of proteins and fats.[17] This hypothesis has been, and remains, more conspicuous by reiteration than by demonstration.[18]

An adequate experimental approach is difficult to achieve since disease induced in the experimental animal may differ from that in man. In general, laboratory studies pertaining to response to infection associated with protein deficiency have measured phagocytic indices, humoral antibody titers produced by a nonpathogenic antigen, a lethal endpoint produced by a virulent, viable pathogen, or simply pathologic tissue changes. Concomitant studies of varia-

* Presented at a Joint Session of the Food and Nutrition and Laboratory Sections of the American Public Health Association at the Seventy-sixth Annual Meeting in Boston, Mass., November 11, 1948.

tions in specific physiologic responses to diet and infection have been rather limited. The response of an organism to infection under any imposed condition is characterized by many adaptive phenomena. It, therefore, seemed desirable to test the implications of protein deficiency and infection further by simultaneous observation of several physiologic adaptations to controlled dietary deficiency and specific infection.

The albino rat seemed an appropriate experimental animal since its diet could be well evaluated, and sufficient base line data pertaining to growth and various other physiologic variables were readily available. Two diseases of economic import were studied: a paratyphoid variant and tuberculosis. The rat is relatively susceptible to the former and resistant to the latter. Successful antibody elaboration following infection with *Salmonella typhimurium* is an important factor determining survival of the rat. Minimal susceptibility or pathologic change subsequent to tuberculous infection would be expected in the rat. In view of the hypothesis in question, severe, controlled protein deficiency in the rat should alter both these expectations.

METHODS

After several extensive preliminary experiments, young growing male Sherman-strain rats were standardized on a control basal diet for 7–14 days. Approximately half were then fed protein deficient diets for an appropriate interval prior to infection. The animals were then divided into experimental groups and inoculated as follows:

	Diet	*Infected*	*Non-infected*		*Total*
Salmonella	18% casein well nourished	20	10		30
	2% casein deficient	18	12		30
			HK †	*Diet Control*	
Tbc.*	18% casein well nourished	19	6	6	31
	8% casein deficient	20	6	7	33
					124

* Four weeks after infection half of the surviving tuberculous rats in all groups were acutely reduced to a 2% diet protein level.
† Heat killed bacilli injected.

At intervals before, and for 42–58 days after, infection, growth rate, food consumption, and several blood and tissue studies were observed. Details pertaining to these methods are reported elsewhere.[19, 20]

RESULTS

The results of the *Salmonella* experiment can be briefly summarized.

Progressive weight loss approaching 20–25 per cent of starting body weight attended protein deficiency. Rats on the adequate protein diet appeared to eat rather more than did deficient animals. However, when adjusted to calories consumed per 100 gm. of rat per 24 hours, consumption in both groups was similar. Infection did not alter *ad lib.* intake.

Commonly used clinical laboratory procedures such as total serum protein and hemoglobin concentrations, total leucocyte and differential counts were applied. The results were not remarkable. Serum protein concentration and total leucocyte counts were somewhat diminished in the protein deficient rats.

By simultaneous determination of blood and plasma volumes with a dye technique,[21] it was possible to estimate changes in circulating proteins and hemoglobin. Such determinations indicated that diet protein deficiency resulted in a 30–50 per cent decrease in unit circulating proteins and a 40–50+ per cent decrease in unit circulating hemoglobin. Infection, *per se*, exerted little influence upon the quantity of circulating protein; but did result in marked diminution of circulating hemoglobin in both diet groups. This latter observation seems compatible with the so-called "hypoferremia of infection."[22]

The cellular composition of a section of femoral bone marrow from each animal was observed for indications of the influence of diet or infection upon hematopoiesis. Reduction of these tabulations to the simplest comparison of white cell-forming *vs.* red cell-forming series (myeloid-erythroid ratio) revealed that protein deficiency was associated with a tendency toward a relative increase of immature myeloid forms—an interesting observation in view of the lower total peripheral leucocyte counts in this group, suggesting a possible lack of a WBC maturing factor. In general, infection seemed to induce minimal change in the bone marrow.

Blood cultures failed to reveal a significant difference in the incidence of bacteremia in the two diet groups. Nor was a mortality difference observed. Humoral antibody titers in response to either the actual infection or a "recall" dose of specific antigen, indicated that deficient animals attained titers equivalent to those of the well nourished groups. The anamnestic response of deficient rats, in fact, was relatively better than that of the well nourished rats. This observation seems quite interesting when considered in reference to the concomitantly determined electrophoretic patterns of the plasmas of these rats. Protein deficiency was characterized by depletion of the albumin and gamma globulin fractions. Despite circulating gamma globulin depletion, the deficient rats had adequate humoral antibody elaboration. Moreover, despite a marked change in titer following secondary antigenic stimulation, there was no change in gamma globulin. These observations reaffirm those previously made that all antibody is not gamma globulin and vice versa.[15]

As another means of examining the hypothesis in question, studies similar to the foregoing were carried out on rats infected with human strain *Mycobacterium tuberculosis*, since tuberculosis is commonly said to be associated with malnutrition. The results of these experiments also may be very briefly summarized.

Growth and food consumption patterns were similar to those previously ascribed to protein deficiency.[19, 23] Tuberculous infection did not alter this pattern.

Histopathological review of various tissues indicated that the typical granulomatous lesions attained maximal development within four weeks after infection. Recognizable organisms had greatly diminished in number within another four weeks. No apparent difference of structure, incidence, or persistence of the specific lesion was noted in the different diet groups. No deaths from tuberculosis occurred during the two month observation period.

Changes in leucocyte and differential counts, hemoglobin and plasma protein concentrations, circulating protein and hemoglobin were essentially similar to those described in the protein deficiency and *Salmonella experiments*[19, 23] and represented a response to diet rather than infection. Electrophoretic analyses revealed no specific circulating plasma protein component changes characteristic of tuberculous infection.

Detailed data pertaining to these studies are available.[19, 20]

COMMENT

In commenting upon results which seem contrary to prevailing social, empirical, and emotional bias, several important qualifications must be stressed.

An appropriate experimental procedure involving the single variable of protein deficiency has not yet been reported. Rigid conclusions cannot be drawn from a biologic study involving isolated changing physiologic responses rather than a specific unequivocal statistical endpoint. Moreover, clinical inference derived from observations on non-indigenous disease in a selectively malnourished rat must be attended by considerable reservation. These studies, however, do suggest that the concept of protein deficiency causing inadequate response to infection would appear to be an over-simplification of a many faceted phenomenon.

SUMMARY

Under the conditions of these studies, protein deficiency did not appear to alter the susceptibility, resistance, course, or physiopathologic responses to either *Salmonella* or tuberculosis infections in the young growing rat.

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Laboratory Tests in the Diagnosis of Brucellosis*

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BRUCELLOSIS is a disease which may present an extremely diversified clinical picture. It may vary from a brief illness lasting only a few days to a prolonged chronic disease of many years' duration. In the acute stage, the symptoms are similar to those of many other infectious diseases, and the patient is usually ill enough to leave no doubt that he has a serious infectious disease. In chronic brucellosis, on the other hand, the symptoms are often multiple, vague, and difficult to evaluate. There are usually no physical signs, and the patient may not appear clinically ill. There are no pathognomonic symptoms or signs, and often the physician has only the patient's subjective complaints, which may closely simulate those of the psychoneuroses. In such a variable and poorly defined illness, a clear-cut clinical diagnosis is seldom possible. Under these circumstances, the physician must rely heavily upon laboratory examinations to substantiate or to render unlikely a diagnosis of brucellosis.

As with all laboratory procedures, a critical evaluation and understanding of the tests used in brucellosis are essential if they are to be a diagnostic aid rather than a pitfall. Diagnostic enthusiasm, coupled with uncritical reliance upon laboratory data has led not only to many wrong diagnoses, but also to defective clinical concepts of the disease.

The main laboratory procedures of use in brucellosis are: culture of the organism from the blood or other tissues, the agglutination test, the opsonocytophagic test, and the skin test.

CULTURE OF THE ORGANISM

The only positive proof of the diagnosis of brucellosis is isolation of the causative organism. Until recent years media and techniques for primary isolation of Brucella have not been adequate. Currently, the most widely used culture medium is Bacto-Tryptose broth fortified with vitamin B_1. We have found that Trypticase Soy broth † more nearly meets the growth requirements of many strains of Brucella. It is now used routinely in our laboratory. One per cent sodium citrate is added to the broth. Five ml. of the patient's blood is added aseptically to 75 ml. of medium and incubated at 37° C. in a closed jar. Ten per cent of the atmosphere is replaced by carbon dioxide which is essential for the initial growth of most strains of *Brucella abortus*. An occasional strain grows best in a slightly reduced oxygen tension. Certain strains of Brucella do not develop sufficiently in broth cultures to give gross evidence of their presence; they may grow feebly for a time and then die out. For this reason, frequent subculture to solid medium (Trypticase Soy agar) is neces-

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sary for isolation of such strains. Subculture also provides earlier identification of the organism. Routinely subcultures are made on the 4th day and on alternate days thereafter for a period of one month.

The most important single point in the isolation of the organism is frequent repetition of attempts. Daily cultures of venous blood for 7 to 10 days should represent the minimum effort in seriously suspected cases. Culture techniques are adequate to recover the organism when septicemia is present. The difficulty, however, arises in chronic brucellosis where septicemia is often absent or certainly not constant. Here, the culture of other tissues is of value. Occasionally the organism may be obtained by the culture of arterial blood following the injection of adrenalin; 0.5 to 1.0 ml. is given subcutaneously and an arterial puncture is performed 20 minutes later. In our laboratory, Brucella has been recovered from cultures of sternal marrow and lymph nodes when repeated venous blood cultures were negative. In all cases when other methods fail, biopsy of a lymph node is indicated. Unfortunately, a suitable hyperplastic lymph node is not always present. The culture of spinal fluid and surgical specimens may at times be worth while. Animal inoculation may be used in the case of tissues and specimens obtained with difficulty and when cultures cannot be repeated, but present culture methods are at least as reliable as animal inoculation.

By the diligent use of the described methods early in the disease, one should be able to recover the organism from most patients with brucellosis. We have yet to see a patient in the first 6 months of illness, in whom we seriously suspected brucellosis, from whom the organism was not recovered.

THE AGGLUTINATION TEST

The agglutination test is probably the most widely used diagnostic procedure in brucellosis. Seldom is such a commonly used laboratory method subject to so much controversy and misinterpretation. Aside from the biological variations due to the organism and to the host, the discrepancies which arise in performing this test are enormous. Sera of known cases of brucellosis when submitted to recognized laboratories yield highly variable reports. Recently we submitted 21 sera to 5 different laboratories.[1] Eighteen of these were called negative by one or more laboratories. Of these 18, 16 were elsewhere called positive in titers of 1/200 or higher, and 12 were called positive in titers of 1/320 or higher—titers which are frequently considered as substantiating a clinical diagnosis. Tests on the same sera in our laboratory against a number of "standardized" commercial antigens yielded as variable results. It is apparent that in everyday practice the reported titer of a serum depends as much upon the laboratory where the test is performed and upon the antigen used as upon the patient's disease. There is great need for standardization of antigens and technique.

Cross-agglutination with other organisms must be considered. It has long been known that there is an antigenic cross with *Pasteurella tularensis*. There is also a significant relationship between the organism of Asiatic cholera and Brucella.[2] An H antigen of *Vibrio comma* is shared by Brucella.[3] The majority of individuals receiving the standard immunization against cholera develop significant titers against Brucella. These may persist for 2 or more years.[4]

An occasional case of culturally proved brucellosis may fail to show agglutinins. Such cases have been reported by reliable workers, but this occurrence is rare. Unfortunately, some enthusiasts have stretched this concept to the point

that they consider the absence of agglutinins the rule rather than the exception.

On the other hand, a high titer is not necessarily indicative of active disease. We have had under observation for 4 years an Italian-born 50 year old man who claims he has never been ill in his life. He works at hard manual labor daily. Yet this man without a symptom or history of any illness consistently runs an agglutination titer of 1/5,000. There are numerous instances recorded of healthy individuals with tests positive in dilutions of 1/1,000 or more. This, too, is the exception.

There is, then, no "diagnostic" agglutination titer in brucellosis. In general, a titer of 1/320 or higher, in the presence of symptoms, is presumptive evidence of the disease. A fluctuating titer which correlates with the presence and remission of symptoms may suggest active infection.

A rising agglutination titer during the course of an undiagnosed febrile illness is of some significance. Here again, other mechanisms may be operative. An anamnestic response may confuse the interpretation. We have observed this phenomenon in a patient with experimental malaria. Prior to the attack the agglutination test was completely negative, but there was slight opsonic activity of the blood. A few days after the onset of malaria the agglutination test became positive in a titer of 1/80, returning to negative again a few weeks after recovery. It is conceivable that higher titers might occur.

After vaccine therapy, of course, it is impossible to interpret the results of an agglutination test. A single injection of vaccine may render the test meaningless for months.

THE OPSONOCYTOPHAGIC TEST[5]

Compared to the agglutination test the technique of the opsonocytophagic test is more involved and must be more precise. Slight variations in technique or slight dissociation of the test organism render the results worthless and misleading. To insure dependability, control blood from known positive and negative individuals must be included each time the test is run. The test must be performed shortly after the blood is drawn. This alone renders it impracticable for the practitioner who does not have ready access to a specialized laboratory. Probably few laboratories perform this test in a reliable manner. Granted that results were dependable, the added information obtained from this test is not great. Opsonic activity probably does in some degree reflect bodily response to the disease. However, during active infection, the test results fluctuate so greatly as to be of little prognostic value. The test may be helpful when a patient has a low agglutinin titer and a markedly positive opsonocytophagic reaction. This suggests an immune state rather than active infection. It is also of some use when negative, as corroboration of a negative agglutination test and a negative skin test, thereby rendering the diagnosis of brucellosis quite unlikely.

THE SKIN TEST

Of the many skin test materials advocated, brucellergin[5] is the most generally accepted and the best standardized. The skin test is of very limited diagnostic value. It should be interpreted analogously to the tuberculin test. A positive test merely means that the individual has at some time been in contact with Brucella sufficiently to become sensitized. A minimum requirement for a positive test should be induration and edema of 0.5 cm. in diameter present at the end of 48 hours. However, the test is commonly misread, with transient erythema being considered as a positive test.

A small percentage of patients with brucellosis do not develop allergy. Also,

early in the course of the disease the skin test will be negative. There is little correlation between the intensity of response and the likelihood of active infection. A negative test may be of some value in rendering the diagnosis of brucellosis unlikely, and in our practice this is its chief use. Cholera vaccination does not produce a positive skin test,[2] nor does tularemia. The skin test may then be helpful in differentiating Brucella agglutinins from those engendered by these conditions.

It should be remembered that antigenic material is injected in performing this test. A small proportion of individuals will develop agglutinins and opsonins after a skin test, even though the test be negative. Hence, all other antibody tests should be completed before a skin test is done.

Finally, in the absence of positive cultures, every bit of information about the patient must be considered in establishing a diagnosis. The opportunity for exposure must be considered. A careful evaluation of the symptoms and clinical course, the physical findings, and the results of all laboratory data are necessary. The results of laboratory tests considered apart from the patient are meaningless. The diagnosis of brucellosis should not be made enthusiastically but critically.

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14 American Republics in WHO

On April 27, 1949, the delegate of Uruguay to the United Nations, Professor Enrique Rodriguez Fabregat, deposited at Lake Success Uruguay's ratification of the Constitution of the World Health Organization. Fourteen countries of the western hemisphere have now ratified: Argentina, Brazil, Costa Rica, Chile, the Dominican Republic, Ecuador, El Salvador, Haiti, Honduras, Mexico, Paraguay, United States, Uruguay, and Venezuela.

This means that the World Health Organization and the Pan American Sanitary Organization are now authorized to conclude a permanent agreement for the latter to become WHO's regional office for the western hemisphere. Since March 1, 1949, the Pan American Sanitary Bureau has been the acting regional office under a temporary working arrangement signed by Dr. Brock Chisholm and Dr. Fred L. Soper of WHO and Bureau respectively.

Chronic Brucellosis*

The Unsatisfactory Status of Current Diagnostic Methods

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THERE is much misunderstanding and misuse of the available laboratory methods in chronic brucellosis, with low grade or no fever. The need is great for a laboratory procedure comparable in accuracy to the blood complement-fixation reaction for syphilis. Until such a test procedure can be developed it is necessary to interpret the available reactions with greater accuracy and greater caution than is commonly employed.

SKIN TESTING

Although it has been recognized by almost every worker in this specialized field that skin testing with any effective *Brucella* antigen may stimulate agglutinins and opsonins, often in marked degree and for prolonged periods of time, there persists a tendency on the part of some clinicians to follow the easiest course, i.e., early and hasty performance of the intradermal test, prior to performance of the blood agglutination and opsonocytophagic tests. These clinicians then look to consultants, laboratory technicians, and bacteriologists for diagnostic help and are disappointed when told that they have committed the unpardonable sin—that of beclouding or destroying all other laboratory evidence (except that which may be obtained from culture).

Harm is done by the occasional report in the literature[1] which tends to absolve the skin testing antigen of agglutinin- and opsonin-stimulating properties. The concept has only recently gained acceptance that agglutinins even in low titer may have diagnostic significance when considered along with other laboratory and clinical data. In fact a tentative diagnosis may be largely influenced by such a combination as specific agglutinins in a titer of 1:40, a positive intradermal reaction (subsequently performed), and some degree of specific phagocytosis, in the presence of a clinical picture suggesting brucellosis. Since agglutinins in any titer are usually lacking in chronic *Brucella* infections, it is nothing short of carelessness to risk destroying the small chance that exists of obtaining diagnostic information through agglutinin (and opsonin) testing, on non-skin tested patients.

Routine skin testing of apparently well persons is to be condemned. It serves no very useful purpose for it does not distinguish the actively infected *Brucella* sensitized patient from the subclinical or inactive infection with persisting skin allergy. It does tend to induce artificial agglutinin and opsonin response which can cause diagnostic confusion if those persons later become ill with symptoms suggesting brucellosis. Furthermore, skin tests, even with the most reliable antigen (i.e., killed whole organisms) may fail to detect past or present *Brucella* infection; not rarely are skin tests negative in the

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presence of positive culture and high agglutinin titers.

The skin test is valuable only in conjunction with the battery of other specific tests, clinical history, and the nonspecific laboratory procedures such as complete blood count, sedimentation rate, and the like. It is a serious error to overstress the value of any of the single tests for none is definitive, except culture—and that only when positive.

Another error is the use of a nucleoprotein such as brucellergin for the intracutaneous test. It is unreliable. In 1938 Angle and his coworkers,[2] in the course of skin testing large groups in an attempt to determine the incidence of *Brucella* infection, especially in school children, carried out skin tests on 163 adults who had been using raw milk from an infected herd. Brucellergin and killed whole *Brucella* organisms were used simultaneously, in opposite arms; 89 patients (54.6 per cent) reacted to killed *Brucella* organisms, but of these only 44 patients (26.9 per cent) reacted to brucellergin. No conclusions were drawn from these findings other than that brucellergin is less likely to cause skin necrosis. In recent years a series of similar observations were carried out among patients referred to the writer because of clinical or laboratory evidence or both, of brucellosis. Among 48 patients tested with brucellergin and heat-killed *Brucella abortus* oganisms simultaneously, 35 patients (72.9 per cent) reacted to the whole organism and of these only 17 (35.4 per cent) reacted to brucellergin. Among those reacting to heat-killed *abortus* organisms but not to brucellergin was one whose blood agglutination reaction was positive in a titer of 1:1,280 and whose blood culture yielded *Brucella suis*.

Individuals skin-tested with brucellergin, even though with negative results, may become sensitized, thereby giving false-positive reactions to subsequent skin tests with other antigens. When skin tests carried out simultaneously with brucellergin and other antigens agree it may be due to contamination of syringes used for brucellergin skin testing with killed whole *Brucella* organisms.

It is true that brucellergin has a lesser tendency than killed whole organisms to produce skin necrosis but its lesser sensitivity as an index of *Brucella* allergy is too high a price to pay for this supposed advantage.

Weak reactions to intradermal antigens must be considered positive. They differ in significance from strongly positive reactions only in the degree of *Brucella* sensitivity indicated in that patient. Even this difference is not uniform, for some patients have little or no skin allergy but marked allergy in other tissues (e.g., negative skin test, positive culture, or agglutination reaction or both, and marked local, focal or systemic reaction to therapeutic doses of *Brucella* antigens).

Bacterial antigen complexes (BAC-Hoffman[3]) made from each of the three separate species of *Brucella* are under investigation as skin testing agents. They may not prove to be species-specific but they do give information as to species-allergy and therefore offer a useful guide to treatment by means of the same antigen. They may be used to supplement the information obtained from intradermal use of killed whole organisms.

BLOOD AGGLUTINATION REACTION

Brucella agglutinins are seldom present, even in low titer, in the chronic illness. Therefore it is essential that the technique be meticulous and that the exact titer be reported to the physician. It is generally agreed that titers of 1:80 or above are of definite significance and that lower titers *may* be significant. The preponderance of evidence indicates that a monovalent anti-

gen is adequate. The antigen should be a standardized and effective one, such as the alcohol treated suspension of smooth *Brucella abortus* employed by the Division of Laboratories and Research of the New York State Department of Health.[4] It is common, even now, for widely discrepant readings to be reported by two or three different laboratories on parts of the same blood specimen.

The microscopic blood agglutination technique, in titers of 1:40 and 1:80 only, is a useful screening method,[5] but must be supplemented by the macroscopic tube technique for greater accuracy and to determine exact titer.

The possibility of a prozone reaction[6-8] must not be forgotten. Sera must be examined in high as well as in low dilutions.

An explanation of the failure of agglutinins to appear or their tendency to disappear after once being present in patients in whom the disease process continues was offered by Griffitts.[8] Sera from patients known to be infected had the property of "blocking" agglutination of *Brucella* organisms suspended in a saline medium, but some of them agglutinated heavy suspensions of *Brucella* organisms suspended in a serum or albumin solution.

Other warnings regarding interpretation of the agglutination reaction are necessary. Cross-agglutination may occur in the presence of other infections due to *Pasteurella tularensis, Salmonella typhosa, Bacillus flexneri* and *Vibrio cholera*,[9, 10] and perhaps in certain Rickettsial and viral infections. Cholera prophylactic vaccine as well as cholera infection may produce *Brucella* agglutinins (and opsonins). That fever of any origin[11, 12] may produce specific *Brucella* agglutinins in uninfected persons has not been substantiated.

Agglutinins in apparently well persons may not be ignored. They may presage active, severe infection,[6] or subclinical infection[13] which later may become severe.

OPSONOCYTOPHAGIC REACTION

It is erroneous to consider this test result qualitatively. It should not be considered "positive" or "negative" for it simply expresses the degree of resistance possessed by the patient's phagocytes. With this concept there will result less confusion, for any degree of phagocytosis (from none to marked) may occur in the presence of *Brucella* infection. It is true, however, that phagocytosis of appreciable degree probably does not occur in the absence of *Brucella* infection, past or present. In that sense only, may a moderate to high reading be considered "positive." Never may any reading properly be called "negative."

The commonest errors in the actual performance of the test procedures are: (1) use of blood more than 3 hours old, (2) use of too high a concentration of citrate, (3) use of rough (dissociated) organisms or contaminated cultures, (4) use of non-virulent *Brucella* organisms, (5) use of any but the most meticulously careful technique in each step of the procedure. Inaccurate results from poor technique have led many workers to discard the test as unreliable. It is of great value as part of the battery of tests although of limited value in itself.

Most workers have found the *abortus* species alone a satisfactory test organism no matter what the infecting species, although some carry out the test with at least two species of *Brucella* separately. This adds to the expense and effort and has the disadvantage of exposing laboratory personnel needlessly to the more virulent *melitensis* or *suis* species.

Foshay and LeBlanc[14] devised a most helpful nomogram for the computation of a numerical phagocytic index. With the aid of Dr. DeWitt Smith a still

simpler and equally accurate method has been devised. The number of cells showing marked phagocytosis is multiplied by 4, those showing moderate phagocytosis by 3, and those showing slight phagocytosis by 1; the total is the numerical index, which corresponds exactly with the nomogram result.

CULTURE AND ANIMAL INOCULATION

Culture is understood to be the one definitive test for brucellosis, all important if positive but of no importance if negative. The need to carry out *repeated* cultures, especially in the chronic illness, to use only the most effective and complete of the special culture media, and methods, and to inoculate animals to supplement the cultural studies, under special circumstances, is still not fully appreciated. It is still the custom in some otherwise well run laboratories to discard cultures as negative if no growth is observed at the end of 10 to 21 days, to use routine instead of special methods (such as incubation in the presence of extra CO_2) and otherwise to frustrate the clinician's efforts to find laboratory proof of diagnosis. Many laboratories will take no active part in cultural attempts because of the danger to laboratory personnel. Such an evasion of duty is difficult to understand, although fear of dissemination of infection through animal inoculation is well founded.

Cultural methods have improved to some extent in the past ten years, but there is reason to hope for still better methods. Castaneda[15] offered some hope of simplification through the device of incorporating a vertical tryptose-agar slant in the side of a closed flask, at the bottom of which there is a mixture of tryptose broth and citrate to which the blood is added. This flask is incubated for not longer than 21 days and is turned on its side every 48 hours for the purpose of bathing the slant with the blood-broth-citrate mixture. If the organism is recoverable at all by this method, it usually will show fine grayish colonies within from 3 to 10 days. However, it is rarely that the *abortus* strain can be so recovered from the patient with a chronic infection, by this or other methods. There is not usually a bacteriemia in this phase of the illness; the *abortus* species grows with the greatest difficulty even in the presence of extra CO_2 Castaneda frequently was able to recover the ***melitensis*** species from acutely ill patients by this means. We have isolated *Brucella abortus* twice by this method; in both instances conventional methods for isolation of *Brucella* had failed.

It is often desirable to culture bile, urine, feces, spinal, synovial or prostatic fluid, and biopsy or operative tissue specimens, using special techniques[16] suitable to the material under study.

COMMENT AND SUMMARY

The available tests are inadequate for uniformly accurate diagnosis of brucellosis, especially of the chronic form. A more sensitive and comprehensive test is needed. It is to be hoped that a complement-fixation reaction for brucellosis can be developed that will fill this need.

Present laboratory methods are often unsatisfactory for the diagnosis of chronic brucellosis, as to sequence in which performed, technique and interpretation.

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Regional Salmonella Centre

The New York State Health Department's Division of Laboratories and Research has been designated as a regional Salmonella Centre by WHO, to collaborate with the World Salmonella Centre at the State Serum Institute, Copenhagen, Denmark. The World Salmonella Centre, with the objective of collecting and identifying salmonella strains, was established by authority of The World Health Organization in 1948, under the direction of Dr. F. Kauffmann, in the Danish State Serum Institute. The New York State Laboratory in Albany was one of the first American laboratories to collaborate with Dr. Kauffmann before the second World War when an International Salmonella Centre, financed by the Commonwealth Fund, was established at the Danish State Serum Institute. Marion Coleman, senior bacteriologist in the Laboratories and Research Division, is in charge of the local regional Salmonella Centre.

Rabies Vaccine Encephalomyelitis in Relation to the Incidence of Animal Rabies in Los Angeles

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THE field of communicable diseases has no more harassing problem than that of rabies. In areas where the disease is endemic the management of persons bitten by animals is unsatisfactory. Any advantage gained from the use of vaccine must be balanced against the chance of resultant, postvaccinal encephalitis.

The following indications for vaccination against rabies in the human being have been suggested[5]: (a) the biting animal is clinically rabid; or (b) is proved rabid by laboratory tests; (c) is suspected of being rabid; (d) in an endemic area, a stray animal escapes after biting; (e) an individual has handled an animal diagnosed as rabid and fresh abrasions of skin have been contaminated with saliva.

The number of persons who develop rabies after the bite of a rabid dog is not known with certainty but on the average may be 5 to 15 per cent[8]; if vaccine is given, the number may be reduced by half.[8] Too often, however, the situation involves categories (c) and (d) above. In such instances it is particularly necessary to estimate the likelihood of severe vaccination reactions. Table 1, as modified from McKendrick's figures of 1940 collected from worldwide sources, shows the incidence of paralytic accidents.[9] Such accidents are attended by a fatality rate of 5 per cent for the dorsolumbar type and 30 per cent for the Landry type of reaction.

Most of the vaccine used in this country is the Semple type and few data are available on the actual number of paralytic accidents here after use of such material. McCoy[6] reported an incidence of 1:2,900 among 17,600 treated persons but since 4 of the 6 reactions were fatal this rate probably is too low. Horack[3] recorded a rate of 1:1,200, 10 per cent fatal, among 24,000 treated persons.

TABLE 1

Incidence of Paralytic Accidents after Rabies Vaccine (from McKendrick, 1940)

Attenuated virus (Pasteur)	1:3,000
Diluted virus (Hogyes-Harris)	1:3,000
Phenol treated virus (Semple)	1:9,000
Ether treated virus (Alivisatos)	1:10,000
Heat treated virus	1:18,000

Some observations made on the incidence of postvaccinal encephalomyelitis in relation to the prevalence of animal rabies in Los Angeles City and County are presented here; 4 of the 9 cases listed were included in a previous report.[7]

Rabies is endemic in Los Angeles. There were (1946) approximately 3.5 million people living in an area of 4,000 sq. mi. in the county and almost 2 million in the 450 sq. mi. of the city proper. During the period of 25 years prior to 1947, there were 3,190 persons in the

TABLE 2

Cases with Reactions to Rabies Vaccine

Age Yrs.	Sex	Vaccine Inject.	Type of Contact	Onset Days after First Dose	Dog	Clinical Impression	Hospitalization Weeks	Condition on Discharge
2	M	7	Face bite	9	Not rabid	Encephalomyelitis	6 (fatal)	No virus obtained from brain by injection into mice. No Negri bodies.
15*	M	13	Bites hip, elbow	12	Not found	Meningomyelitis	2	Recovered.
33	M	13	?	?	?	Myelitis	0	Physician's record not available.
17*	F	6 (2 ml.) 8 (1 ml.)	Bite	18	Rabid (cat)	Encephalomyelitis	1	Residual stiffness back.
12	F	14	Petted dog	11	Rabid	Myelitis	2	Recovered. Completed rabies vaccine treatment 4 yrs. before.
11	F	5 (2 ml.) 6 (1 ml.)	Nonpuncture bite	10	"	Meningoencephalitis	1	Slight diplopia.
40*	F	5	Bite	4	"	Encephalitis	3	Marked improvement. Poliomyelitis 11 years before.
25*	M	11 (2 ml.)	Bite, hand	10	"	Transverse myelitis	1	Moderate urinary retention. Ankle clonus.
24	F	5 (2 ml.) 6 (1 ml.)	Bite on leg	11	"	Meningoencephalitis	1	Recovered.

* Previously reported [7]

city bitten by dogs proved to be rabid, but 3,560 persons received rabies vaccine. Of 22 deaths from rabies 14 had no vaccine. In 20 years of this period there were 14 cases of human rabies in the county exclusive of the city.

In the city approximately 90 per cent of the dogs over 4 months of age are licensed. On the basis of 125,000 licenses issued in 1946 the city's dog population exclusive of puppies may be estimated to be 140,000. On the average, a laboratory diagnosis of rabies is made annually on 40 dogs. Thus, at least one dog in 3,500 in the city becomes rabid. Since there are an unknown number of rabid dogs either not brought to examination or not detected if examined, the actual incidence is almost certainly higher. Approximately 150 rabid dogs per year are found in the county outside the city but the total dog population in the county is unknown.

Some 10,000 animal bites per year are reported in the city; these are almost all by dogs. Approximately 70 persons per year are bitten by known rabid animals; thus, one bite in 140 is by a rabid animal. On the basis of a 10 to 15 per cent human fatality rate following the bite of a rabid animal [8] the chance of getting rabies from known animal bites in the city of Los Angeles is 1:1,400 to 1:2,100. This does not include the numerous unreported bites which must occur.

During the 7 year period of 1940–1946, 9 cases of severe postvaccinal reactions, including one death, occurred among 5,500 persons receiving vaccine in the city and county, an incidence of 1:600. Particulars concerning these cases are shown in Table 2. All received Semple vaccine. Although 4 were given the product of one manufacturer, there is no reason to believe on the basis of total use of this particular product that it is unusually encephalitogenic.

DISCUSSION

Even the remote probability of developing rabies from a dog bite indi-

cated by the rough approximation made here will not alter the necessity of employing vaccine for any person bitten by an unidentified dog. Certainly, however, many persons receive vaccine who do not require it.

On the basis of data presented here and elsewhere it is apparent that the incidence of rabies vaccine encephalitis is a real contraindication to its indiscriminate use. Without discussing the theories regarding the etiology of this condition, it is likely that the incidence will be reduced markedly when a product more completely purified of brain tissue is produced; most present vaccines consist of approximately 10 per cent suspensions of rabbit brains.

There is ample evidence that rabies can be controlled in the absence of any considerable wild animal reservoir by control of dogs. Various plans and programs for control are now under discussion.[1-4] It is certain that none will be effective unless accepted by the public. This aspect is complicated in the Los Angeles area by the presence of a large and highly vocal group of dog fanciers who tend to resist all efforts to interfere in any way with the dog population. While such persons may reject programs based on protection of human beings they can scarcely fail to accept one designed primarily for the protection of dogs.

SUMMARY

In Los Angeles City and County approximately 200 rabid dogs are detected annually. There is only one human case per year but at least 800 persons are given rabies vaccine. The chance of acquiring rabies from known dog bites in Los Angeles is estimated to vary from 1:1,400 to 1:2,100.

There were 9 cases, one fatal, of postvaccinal encephalomyelitis among 5,500 treated persons, an incidence of 1:600.

An adequate rabies control program acceptable to the public and directed at the canine population is highly desirable.

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NOTE: For assistance in this study we are greatly indebted to Drs. George M. Uhl, Carl J. Hawley, and Lenor S. Goerke, of the City Health Department, Roy O. Gilbert and Mary B. Dale, of the County Health Department, Charles Arthur of the Pasadena City Health Department, and Dr. Harrison Eilers of the Long Beach City Health Department.

A "Physical Growth Record" for Use in Elementary and High Schools

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IN 1947 the writer was invited to prepare a "Physical Growth Record" for use in schools. The invitation came from the Joint Committee on Health Problems in Education of the American Medical Association and the National Education Association. Specifically, what the Joint Committee requested was a proposal for systematically recording and interpreting measurements of "height and weight" on school children—one that would lend itself to "wide distribution" and to sound yet ready use by the school nurse, the physical education instructor, or the one room rural school teacher.

A proposal was developed and prepared in the form of a 4 page booklet. This was submitted at a later meeting of the Joint Committee and, after preliminary favorable reaction, was referred to a subcommittee for detailed examination from the standpoints of format and content. A number of helpful suggestions were made by this subcommittee. Summarily, it was agreed by all parties concerned that (a) separate booklets would be prepared for boys and girls; (b) the charts on pages 2 and 3 of the booklets would begin at age 4 years and extend to age 18; (c) Drs. Dean F. Smiley and Fred V. Hein, on the basis of their practical experience with health education publications and school personnel, would make recommendations for improving the readability of pages 1 and 4 of the booklets; (d) the booklets would be sponsored and distributed by the Joint Committee; and (e) the writer would write an article describing the project more fully than was considered necessary in every booklet.

The booklets have been revised in accordance with the above agreements and are now available.* This paper is intended to constitute the writer's complete report on the project.

GENERAL FORM AND PURPOSE OF BOOKLET

Each booklet is designed for recording the growth in height and weight of a single child. Pages 1 and 4 of the booklet describe how to measure height and weight, how to register the measurements made, and how to interpret the status and progress information thus obtained. Pages 2 and 3 provide charts covering the age period 4 to 18 years for graphically depicting the growth of the individual in relation to growth norms. It follows that once a booklet has been assigned to a child it continues to be serviceable throughout the elementary and high school years.

The "purpose" of the booklet is stated to be that of supplying "interesting and helpful information" regarding the physical growth of school children. Near the top of page 1 space is afforded for indicating the child's name and date of birth. These are the only two personal items carried on the outside of the booklets. All of the physical

* They may be secured from the American Medical Association, 535 N. Dearborn St., Chicago 10, Ill., or the National Education Association, 1201 Sixteenth Street, N.W., Washington, D. C.

growth data collected on the child are recorded on the two inside pages—this gives the double advantage of protecting the data during filing and, whenever a booklet is open, of making visible the entire physical growth information accumulated on the child. There are separate forms carrying the captions "Physical Growth Record for Boys" and "Physical Growth Record for Girls."

HOW TO MEASURE HEIGHT AND WEIGHT

Weight—If available, use beam-type, platform scales. At the beginning of each examination period check the scales and, in the event they are out of balance, adjust them. Have the child remove shoes and sweater or jacket.* Request the child to stand in the center of the platform of the scales. As the weight record is read, make sure that the child's hands are not in contact with the head portion of the scales, with a wall, or with any other object. Determine weight to the nearest one-half pound.

Height—Use a measuring scale fixed in the upright position, and a wooden headpiece having two faces at right angles. The measuring scale may be an accurate yardstick, metric rod, steel tape, or paper scale.† Whatever type of scale is used, it should be firmly fastened either to a special upright board or (if there is no projecting wainscoting) directly to a smooth wall. While it is possible to use a chalk box as a headpiece, this is not recommended in a continuing school program. Secure a headpiece of more satisfactory design.‡

Measure height with shoes removed. Have the child stand with (a) heels, buttocks, upper part of back, and rear of head in contact with the wall or board; (b) heels nearly together but not touching each other; (c) arms hanging at the sides in a natural manner; and (d) head facing straight forward.** When the child is in position, place one face of the headpiece against the measuring scale and bring the other face down, keeping it horizontal, until it crushes the child's hair and makes firm contact with the top of the head. See that the heels are kept in contact with the floor, that the trunk is maintained in "non-slumped" contact with the measuring scale, and that no obstruction (e.g., clasp, braid, ribbon, or comb) prevents contact with the head. Take two separate height measurements on each child. Record height to the nearest one-fourth inch.

Some schools will find it convenient to measure children monthly or bimonthly, while other schools will want a program more economical of time. It is recommended as a minimum procedure that each child is measured three times during the school year, in September, January, and May.

In so far as practicable, measure a child on or near the date of the month corresponding to his birth date. At the time of each measurement calculate the child's age. Do not consider age any more precisely than to the nearest month. That is, if a child is 4 years 8 months 5 days when measured, regard him as 4 years 8 months; if a child is

* The objective here is to reduce the child's clothing to a convenient minimum in order that the weight records will be as free as is considered expedient from augmentation and variation due to amount of clothing.

† An accurate scale printed on especially manufactured paper may be purchased from the Iowa Child Welfare Research Station, State University of Iowa, Iowa City, Iowa. Price $1.20.

‡ Specifications for such a headpiece may be obtained from the Bureau of Health Education of the American Medical Association, and an illustration will be found in *Univ. Iowa Stud. Ch. Wel.* 12, 2:109, 1936. (Succinctly, the shorter edges of two pieces of seasoned wood 7 inches by 5 inches are joined at right angles. Mounted within the 90° angle is a triangular strip of wood having an opening for insertion of the fingers. Many schools will find it possible to secure such an instrument through the cooperation of the manual arts instructor.)

** In anthropometric terms, the head should be oriented on the Frankfort Horizontal, *i.e.*, the tragus and the lower border of the bony orbit should lie in a plane parallel with the floor.

10 years 11 months and 21 days, regard him as 11 years.

HOW TO USE THE CHARTS

Figures 1 and 2 reproduce the charts from pages 2 and 3 of the booklets for boys (Figure 1) and girls (Figure 2). It is on these charts that the height and weight records of the individual child are registered. The charts are designed to portray both the status of the child at any age between 4 and 18 years and the progress of the child during any age period within the limits of 4 and 18 years.

Registering height and weight status—Assume that Figure 1 is to carry the record of Ted Stevens. Ted has just been examined; he weighs 44½ pounds, is 44 inches in height, and became 5 years of age yesterday. Refer to Figure 1: Locate age 5 along the top of the left-hand chart and 44 inches along the upper left-hand margin. Plot a point (place a dot) under the 5 and opposite the 44. Just above this dot on the HEIGHT portion of the chart write "44." Next, find age 5 along the bottom of the left-hand chart and 44½ lbs. along the lower left-hand margin. Plot a point above the 5 and approximately opposite 44½. Below this dot on the WEIGHT portion of the chart write "44½." With the completion of these directions, the height and weight status of Ted Stevens at age 5 years is fully registered. The status of Ted at other ages (or of any child) may be recorded in a similar manner.

Registering height and weight progress—Assume Ted is now 8 months older. His weight was taken at age 5 years 4 months but it was not possible at that time to get an adequate measurement of height due to a knee injury. The weight record was 46 lbs. Now, at 5 years 8 months, Ted weighs 48 lbs. and has a height of 45¾ in. Assume further that points representing weight at these two ages and height at the

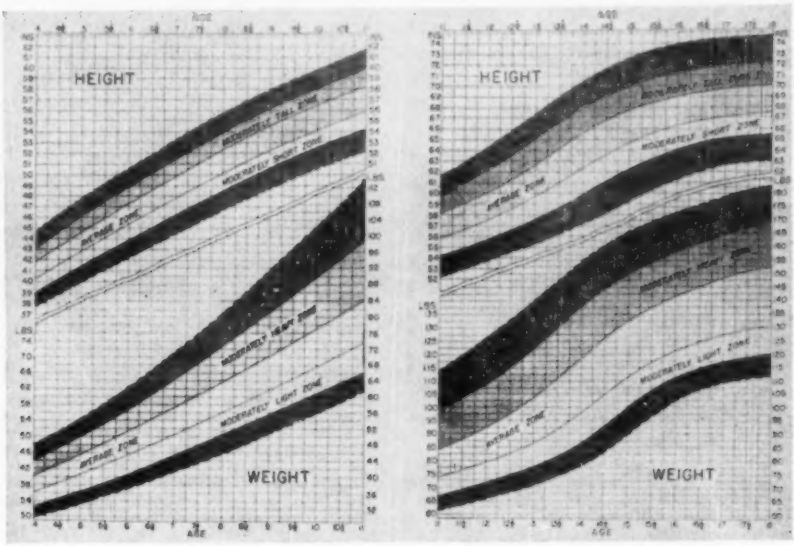

FIGURE 1—Reproduction of pages 2 and 3 of the "Physical Growth Record for Boys." Each chart is reduced from size 11 inches x 8 inches.

later age have been plotted on Ted's record (Figure 1). Having status materials at more than one age, it is now possible to derive curves of progress. Ted's height and weight progress over the age period from 5 years to 5 years 8 months is portrayed by drawing lines connecting (a) the two points on the height graph, and (b) the three points on the weight graph. Obviously by following the same general procedure, curves of progress may be obtained for any boy or girl over whatever period is desired within the age limits of 4 years and 18 years.

HOW TO INTERPRET THE CHARTS

After measuring a child and recording his or her measurements, one is confronted with the important problem of interpretation. What do the records indicate regarding the child's physical status and growth progress? What services will they perform in the evaluation of health?

Interpreting status—Ways in which the "Physical Growth Record" may be used for characterizing and appraising a child's status are as follows:

1. By following the recommended procedure of writing the measurement figures above or below each plotted point, there is available a ready description of any child's overall body size at each of the ages that measurements have been taken. For example, suppose Ted Stevens requests information on his size at age 5. His record describes him as weighing "44½" lbs. and as having attained a height of "44" in.

2. It will be seen that each of the HEIGHT graphs in Figures 1 and 2 depicts five normative zones—Tall, Moderately tall, Average, Moderately short, and Short. The zone in which a child's height point for a given age is located indicates his or her position with reference to the heights of others* of

* Explicitly, with reference to the heights of "white children of northwest European ancestry living under better-than-average conditions." This is discussed in a later section on "How the charts were obtained."

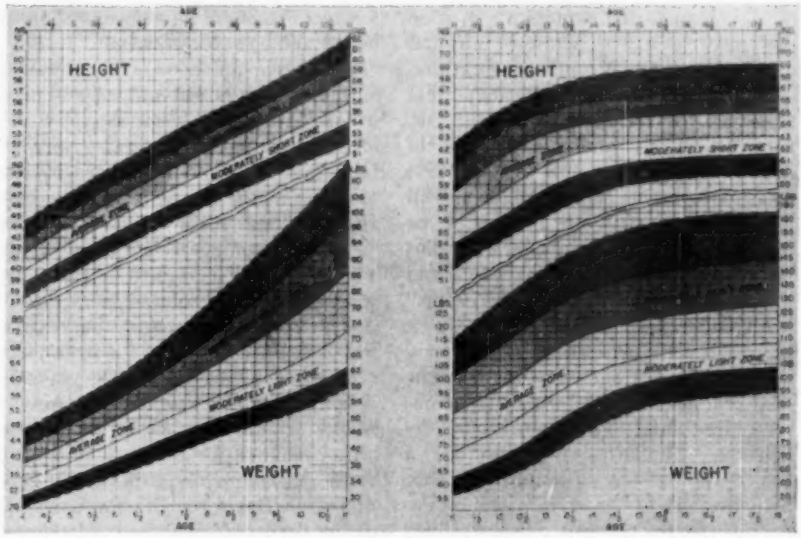

FIGURE 2—Reproduction of pages 2 and 3 of the "Physical Growth Record for Girls." Each chart is reduced from size 11 inches x 8 inches.

like sex and age. Shown on the WEIGHT graphs of Figures 1 and 2 are comparable normative zones designated Heavy, Moderately heavy, Average, Moderately light, and Light. The zone of location of a child's weight point for a given age similarly indicates his or her ranking in the distribution of weight at this age. The illustrative values given at age 5 show Ted to fall in the "Average zone" for both height and weight. Assume that Sam Weber and Doris Day also were examined at age 5: Sam's height was 47 in. and his weight 48 lbs.; the height and weight values obtained on Doris were 42 in. and 50 lbs., respectively. In relation to other children of like age and sex, Sam (referred to Figure 1) is "Tall" and "Moderately heavy," while Doris (referred to Figure 2) is "Moderately short" and "Heavy."

3. Whenever a child's height and weight points do not fall in corresponding zones (e.g., Tall and Heavy, Short and Light), there are two avenues of interpretation to be considered. That is, discrepancy or dissimilarity in zone placement (e.g., Moderately tall and Moderately light, Moderately short and Moderately heavy) may indicate normal stockiness or slenderness of build, or, may reflect an undesirable state of health. Suppose at the time of first measurement the height points of Bill Brown and Mary White each lie in the "Average zone," while the weight point for Bill lies in the "Heavy zone" and that for Mary in the "Light zone." Both children should be referred to a physician for examination. Mary may be a healthy girl of slender build or she may be "underweight" due to some unrecognized infection or nutritional deficiency. Similarly, Bill may be a healthy boy of stocky build or he may be "overweight" and in need of endocrine therapy, an especially prescribed diet, or a marked change in his daily regimen. The reciprocal roles of the "Physical Growth Record" and the physician will be readily appreciated here: The "Record" furnishes leads on possible deviations in health which serve to bring certain children to the physician's attention; the physician, in turn, utilizes his medical knowledge to determine which of the alternative interpretations of the "Record" appears the more sound.

Interpreting progress—Uses of the "Physical Growth Record" in describing and evaluating a school child's progress are:

1. The difference between a child's height measurements at two successive ages indicates the amount of augmentation or increase in height that has occurred during the interval. Likewise, by subtracting a boy's (or girl's) weight value for a given age from his (or her) weight value for a different age one obtains a figure showing the change in weight over the intervening period. On referring again to the illustrative materials for Ted Stevens, it will be found that during the age period 5 years to 5 years 8 months he gained 1¾ in. in height and 3½ lbs. in weight.

2. During childhood, the relation of an individual's height and weight curves to the appropriate normative curves affords information pertaining to satisfactoriness of growth. In the healthy child, over the period extending from age 4 in both sexes to age 9 for girls (Figure 2) and age 11 for boys (Figure 1), individual curves of height and weight run approximately parallel with their respective normative curves, i.e., individual height curves for boys follow the course of the boys' zone paths for height, individual weight curves for girls follow a course similar to that of the girls' zone paths for weight, and so forth. Consequently, if the height curve of Donna Davis (or Jim Jamison) falls along the middle of the "Moderately short zone" during the years from 4 to 7 and then tends abruptly toward

the "Short zone" (due, let us assume, to a gain between 7 and 7½ years of only ¼ to ½ in.), growth after 7 is "unsatisfactory" and warrants medical investigation. Although the weight curves of individual children are often less regular than their height curves, a weight curve which shows a downward dip (loss of weight), a plateau (failure to gain), or a sharp turn upward (excessive gain) should be considered suspect. The child should be weighed again the next day, or as soon thereafter as convenient: If the weight deviation is confirmed it should be regarded as sufficient cause for referring the child to a physician.

3. Beyond age 9 for girls and age 11 for boys, alignment of individual height and weight curves with the appropriate zone paths of Figures 1 and 2 permits sound appraisal of growth, providing allowance is made for variation in the timing of the so-called "adolescent spurt" or circumpubertal acceleration. There are wide individual differences in the age at which accelerated height and weight growth takes place; physically normal, healthy children in some instances will manifest more rapid growth by age 10 (girls) or 12 (boys), while in other instances rapid growth will not begin until after age 14 (girls) or 16 (boys).* Except for having to take into account this variation in age of the circumpubertal spurt, interpretations of physical growth progress are no different over the adolescent years than during the childhood years.

How does one make allowance for differences among individuals in the time at which the adolescent acceleration takes place? Assume that Nancy and Janice are practically alike in height and weight at each age from 4 to 9, but that Nancy begins rapid growth before 10½ and Janice not until after 13. Further, assume that Don and Dick consistently follow the course of their separate zone paths over the years from 4 to 11; but that Don begins rapid growth before 12½ and Dick not until after 15. Under conditions of normal, healthy growth, the height and weight curves of these four individuals will not follow the course of the zone paths within the age intervals 10 to 15 years (the girls) and 12 to 17 years (the boys). By ages 11 and 13 the curves of Nancy and Don respectively will be rising more rapidly than do the zone paths: As long as the height and weight curves for an individual are both following a like course, there is no need for concern. Over the years 10 to 13 and 12 to 15 the curves of Janice and Dick respectively will rise more gradually than do the zone paths: Again, as long as an individual is continuing steady growth in height and weight at his or her childhood rates, this growth should not be judged "unsatisfactory."

HOW THE CHARTS WERE OBTAINED

Method of construction—The charts (Figures 1 and 2) were constructed using percentile values obtained on a sample of the elementary and high school population. Specifically, the values used were the 1st, 10th, 30th, 70th, 90th, and 99th percentiles for height and weight at each successive annual age from 4 to 18. These six percentiles for each age and measurement were regarded as delimiting five zones.

The normative materials presented in the HEIGHT portions of the charts were drawn to the six series of height percentiles and are precisely described as follows: The "Short zone" is delimited by the 1st and 10th percentiles, the "Moderately short zone" by the 10th and 30th percentiles, the "Average zone" by the 30th and 70th percentiles, the "Moderately tall zone" by the 70th

* See Meredith, Howard V. Stature of Massachusetts Children of North European and Italian ancestry. *Am. J. Phys. Anthropol.* 24, 3:319–343, 1939.

and 90th percentiles, and the "Tall zone" by the 90th and 99th percentiles. Correspondingly, the normative materials presented in the WEIGHT portions of the charts were drawn to the six series of weight percentiles, the "Light zone" being bounded by the 1st and 10th percentiles, the "Average zone" by the 30th and 70th percentiles, and the "Heavy zone" by the 90th and 99th percentiles. In all of the graphs it will be seen that solid lines represent percentiles 10, 30, 70 and 90, while the two extreme percentiles are represented by dash lines.

A boy whose height point for a given age falls in the "Tall zone" will be recognized to have a height which exceeds that of not less than 90 per cent of the boys constituting the sample (i.e., he ranks among the tallest 10 per cent). In contrast, a boy whose height point falls in the "Short zone" obviously has a height less than that of 90 per cent or more of the boys making up the sample (i.e., he ranks among the shortest 10 per cent). A girl whose weight point for a given age lies in the "Average zone" has a weight which both exceeds and is exceeded by not less than 30 per cent of the girls' sample—she is of average weight in the sense of being among the middle 40 per cent of the group.

Source of data—Collection of the height and weight data from which the normative materials were derived took place during the years 1930 to 1945* in the University of Iowa experimental schools, Iowa City, Iowa.† The subjects—there were between 100 and 200 of each sex examined at each year of age—were white children of northwest European ancestry living under better-than-average conditions from the standpoints of nutrition, housing, and health care. Explicitly: (a) over 90 per cent of the children were of northwest European ancestry, while only a scattering were of southeast European descent, and (b) approximately 40 per cent of the fathers were professional men (mainly members of the university faculty); 35 per cent business proprietors, managers, or skilled trade employees; 15 per cent farmers; and the remaining 10 per cent clerks, carriers, and semi-skilled laborers.

Are the normative materials presented in the charts appropriate for use in any North American school? More specifically, are they validly employed in schools whose pupils are drawn from the unskilled-laborer class, or from districts largely populated by families of Italian, Mexican, or Japanese ancestry? For purposes of growth and health appraisal, most school physicians and pediatricians consider it preferable to evaluate children of low socio-economic status in terms of norms obtained on groups for which nutrition and health care are known to be reasonably adequate. Charts based upon children representing a few other ethnic groups probably will be found desirable.‡ In the meantime, the presently available charts will be found of value with any group in evaluating growth progress.

A final word on the role of the particular school program here outlined. The reader is cautioned not to regard

* The inappropriateness of evaluating present-day children with norms based upon data collected earlier than the 1930's has been clearly shown. See Meredith, Howard V. Stature and Weight of Children of the United States. *Am. J. Dis. Child.* 62, 5:909–919, 1941; Meredith, Howard V., and Meredith, E. Matilda. The Stature of Toronto Children Half a Century Ago and Today. *Human Biol.* 16, 2:126–131, 1944.

† Some may question the extent to which norms based on Iowa children are suitable for use in other parts of North America. The evidence to date on this problem supports the view that the association between a child's height and weight and the geographic region in which he lives is so slight as to be inconsequential in the construction of school norms. See Meredith, Howard V. Stature and Weight of Children of the United States. *Am. J. Dis. Child.* 62, 5:927–932, 1941.

‡ See Lloyd-Jones, Orren. Race and Stature: A Study of Los Angeles School Children. *Res. Quart.* 12, 1:83–97, 1941; Matheny, Walter D., and Meredith, Howard V. Mean Body Size of Minnesota Schoolboys of Finnish and Italian Ancestry. *Am. J. Phys. Anthrop.* 5 n.s., 3:343–355, 1947.

the "Physical Growth Record" described in this paper as a sufficiently comprehensive anthropometric program to meet all school needs. This program is recommended for schools where it is not considered practicable to adopt a program calling for more measurements than height and weight. For schools able to carry a somewhat broader program the proposal developed by Stuart and Meredith is preferable.*

* Stuart, Harold C., and Meredith, Howard V. Use of Body Measurements in the School Health Program. *A.J.P.H.* 36, 12:1365–1386, 1946, and 37, 11:1435–1438, 1947. For an appraisement program still more comprehensive see McCloy, Charles H. Appraising Physical Status. *Univ. Iowa Stud. Ch. Wel.* 12, 2:126, 1938, and 15, 2:260, 1938.

Public Health in the Middle East

Plans for developing a health control program in the Middle East are being developed through the coöperation of a number of agencies. Under a grant from the Commonwealth Fund, Henry E. Meleney, M.D., of the New York University-Bellevue Medical Center of New York City is surveying the teaching needs for the American and French Universities in Beirut, Lebanon. Full-scale public health teaching will be provided by American University under the leadership of Dr. Zaken Shakhashiri, now training at the Johns Hopkins School of Hygiene, and with the help of the Rockefeller Foundation.

The Lebanese Minister of Health, Dr. Elias Khoury is planning with Dr. Bruce Wilson, regional director of the Rockefeller Foundation, for the training of Lebanese students in public health in the United States under Rockefeller Foundation scholarships.

The recent Cairo regional meeting of WHO disclosed that the physical and intellectual capacity of the population was being seriously undermined by the startling prevalence of infectious diseases. Oil interests also have felt the need of help with their public health and preventive medicine programs among their workers. They are providing funds for raising salaries sufficiently to hold men of ability in the medical school of American University.

At the same time, the Chief of State of Syria, General Husni Zayem, hopes to improve health and medical instruction at the medical school in Damascus. The dean of the medical school is taking part in some of the Beirut planning for improved teaching.

Techniques of Counseling in Regard to Health Problems*

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THE group consisted of very able persons engaged in many kinds of health education. They participated in recording, in discussion, and in spontaneous dramatization of interviews. It is difficult to summarize outcomes briefly as the chief value was in the sensitivity gained through consideration of concrete situations.

The "Discussion 66" technique was used to bring out everyone's questions and problems about health counseling.

The discussion of these questions and problems follows:

1. What is the aim of health counseling?

The end in view of health counseling is healthier persons. This end is achieved through changes in attitudes, a new orientation, a clearer idea of one's health potentialities and how to realize them. Counseling is a face-to-face relation in which growth takes place. It is an experience in which the child or adolescent obtains a clear idea of the best health possible for him and how to achieve it. Personal adjustment often results in desirable changes in the environment and affects group morale favorably. Better health also enables the child to profit more from all the experiences the school offers; it helps him to learn better. The effect of health counseling may even extend to the next generation through parents who understand themselves and have achieved the best health possible for them.

The role of the counselor is to facilitate the process of self-realization. Guided by a goal that is bigger than himself and beyond himself, the individual will use the resources within himself to attain his most acceptable self. This is a social self that contributes to the welfare of all.

2. How is counseling related to the total health education program?

Counseling is part of a larger whole, including group experience. In the classroom, and on the playground the teacher recognizes health problems, e.g., several accidents that have occurred, colds being spread unnecessarily. She brings these problems up for class discussion, solutions are suggested, and the best selected and carried out. Attitudes toward health are built through group discussion. Thus, counseling of individuals is done against a background of group experience; it uses various school and community resources.

Individual conferences may indicate a need for a more varied physical education program, ranging from a rest period to strenuous competitive games. More committees, small interest groups, more informal social experiences may be needed for the all-around development of some students. In subtle psychosomatic ways, success and satisfaction in social relations affect an individual's health. Educational and vocational de-

* Review of discussion at a Round Table before the School Health Section of the American Public Health Association at the Seventy-sixth Annual Meeting in Boston, Mass., November 9, 1948.

cisions, attitude toward marriage and family life, feelings of inferiority and inadequacy, to some extent involve health factors.

3. What situations offer opportunities for health counseling?

The health examination and preschool clinic offer opportunity for counseling pupils and parents of young children; teachers recognize the need for counseling certain individuals in their groups. The first step in studying reading problems is to check on visual, auditory, speech, and other health conditions; home visits, interviews sought by parents and by children all offer opportunities for health counseling. The attendance officer or a social agency may bring health needs of pupils to the attention of the counselor. Parallel with the problem approach to health counseling, is the basic developmental counseling that helps every pupil to discover and develop his health potentialities. As counseling is always in a setting, it will vary with the type of school and community, personality and training of the staff, resources in the school and the community, and needs of the pupils and their families.

4. Who should do counseling?

Teachers, nurses, doctors, counselors, psychologists, psychiatrists each work on different levels of counseling. Teachers should always be brought into the picture; they have the advantage of the longest daily contact with pupils and the opportunity to observe them in groups; they can give them help at the psychological moment when they feel the need of it; they can offer "mental hygiene first aid." Nurses have more technical background for their counseling but leave diagnosis to the physician. Psychological counselors and psychiatrists work on a deeper level of psychotherapy. In situations in which there are no specialists, the teachers and principal establish a constructive, friendly relation with pupils and their parents and make a survey of local, state, and national resources on which they may draw for mental hygiene, health, social work, and psychiatric services.

5. What are the techniques of effective counseling?

The tendency on the part of many health workers is to give advice. This advice frequently does not "take." Counseling is not advice-giving. Instead of assuming the responsibility for solving parents' or pupils' health problems, the worker, through skillful counseling, should try to stimulate them to take initiative and responsibility. The short single contact often goes through three phases: (1) the counselee expresses freely his thoughts and feelings and tries to think through the situation, (2) the counselor tries hard to understand; he reflects the counselee's feelings, raises questions that help him to clarify the situation, and interprets, if he feels that the counselee is ready for interpretation; (3) the counselee makes plans to carry out after the interview. At this stage the counselor may give information or make several suggestions, if the counselee has reached an impasse in his own thinking.

The counselor provides an atmosphere in which the individual feels encouraged and free to think through his problems of development. In this process parents and pupils grow in responsibility for self direction, in facility in self analysis, and in the ability to use resources within themselves and their environment to attain better personal and community health.

6. How can the quality of counseling be improved?

As most administrators, teachers, nurses, and school physicians have had no preparation for their counseling re-

sponsibilities, they need help in improving their counseling techniques. Some of them will take courses in counseling; others will attend workshops; all can be helped through inservice education. The case conference is a slow but sure method of increasing school people's understanding of pupils. All the persons in contact with the case to be presented should be present. In a rural or small school this might be only the teachers and principal and perhaps the county public health nurse. In another situation, not only principal and teachers of the pupil, but also the school nurse, physician, school counselor, psychologist, representatives from social work and youth serving agencies that have had contact with the case might be present. The conference in which information about the pupil and his family is pooled and interpreted and recommendations made becomes a learning experience for all concerned.

Care Widens Its Services

It is no secret that, in spite of constantly improving conditions in the world, there are still many persons in many areas whose food intake is on the malnutrition, and often dangerously near the starvation, level. In view of this, Care has issued a new "They Still Need Care" packet that has literally everything needed to make sure no one will pass by on the other side—case histories, newspaper articles, *Fortune Magazine* article, among them. Care now has a great variety of food and supply packages, including one for babies, for literally everywhere from Okinawa to Greece and Cyprus. And on the theory that "man does not live by bread alone" it also has a book program.

Included is an attractive pamphlet with photographs and pictographs telling something of the three year history and activities of Care. It started in 1945 as a coöperative effort of 22 agencies some of which have since consolidated; now there are 26. The first package was delivered in France in May, 1946. As of October 31, 1948, more than 6,000,000 packages had been delivered (now well over 8,000,000). Plans are under way to extend operations to China, perhaps by the end of 1949.

This kit should be widely distributed. It is available from Care, 20 Broad St., New York 5.

Progress Report on Hospital Survey and Construction Act*

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TWENTY-SEVEN months ago the President of the United States affixed his signature to a health bill that was unique in the history of this country. This was the Hospital Survey and Construction Act, Public Law 725, 79th Congress. This was a basically new and different type of health legislation which highlighted close coöperation between the federal government, state governments, non-profit organizations, and local communities. The act recognized hospitals as being a basic necessity in our public health structure, and outlined a plan for careful surveys of need to be followed by federal financial assistance in the construction of new hospitals and health centers. It is our purpose today to appraise, and likewise to praise, the accomplishments of the several states in this program to date.

THE PROBLEM

In viewing the accomplishments of the hospital program to date, it is well to look first at some of the problems with which the states were faced in the very beginning. I believe one of these might be called the psychological adjustment. In no previous program have the states been called upon to coöperate so closely with state and local hospital associations and with private non-profit associations in local communities. It was necessary to acquire new viewpoints and to establish rapport between the state governments and local community organizations.

The legal requirements of the federal act were rather formidable in most states. In some states, as many as three different types of new legislation were required. These were (1) legal authority to make the surveys; (2) legal authority to engage in the program as a whole, that is, to receive money and to pay it out and to employ staffs; and (3) legislation authorizing standards of maintenance and operation for hospitals receiving federal aid. (The act provided that this last legal requirement must be met by July 1 of 1948, but, as you know, the 80th Congress passed an amendment allowing a later deadline for this provision.) These legal requirements were fulfilled with remarkable dispatch, considering the magnitude of the problem. Advisory councils were set up in each state and wheels of administration began to turn.

One of the most important problems was the acquisition of new staffs of a type infrequently if ever before used in state health departments, such as, hospital administrators, architects, engineers, and so on through the long list of special skills required in the construction and operation of hospitals.

THE PROGRAM

The first big problem facing the states was the surveys of need. These

* Presented before a Joint Session of the Engineering and Medical Care Sections of the American Public Health Association at the Seventy-sixth Annual Meeting in Boston, Mass., November 12, 1948.

were in most instances undertaken promptly and the preparation of the state plan followed the initial survey. The quality of the state plans coming out of this program I believe has surprised everybody, including the states themselves. Each definable community throughout the country, for the first time in history, has had its hospitals evaluated from the standpoint of their abilities to perform services required in that community. It is of interest, but not surprising, to note that of the 1,024,286 hospital beds evaluated, 144,909 were found not to meet these specifications and were declared non-acceptable. The system of priorities devised by the states has proved to be a remarkably potent factor in allowing the orderly administration of the program without political or other interference. The logical and factual nature of the priority system almost entirely precludes favoritism in the selection of projects. Since the projects to be aided are selected on a logical and factual basis, the prevailing philosophy among hospitals and communities is not "how can we get hold of some of this federal money," but rather "do we qualify for assistance?"

Also for the first time, state plans have presented an accurate picture of what the real hospital needs are in the country. They have produced the following picture:

We have 474,000 non-federal general hospital beds, of which 397,000 are considered by the states to be acceptable; we need 256,000 additional general beds. We have 85,000 tuberculosis beds, of which 72,000 are acceptable; we need 84,000 additional beds. We have 429,000 mental hospital beds, exclusive of those in domiciliary institutions caring for mental defectives and epileptics. Of these, 382,000 are acceptable and 311,000 more beds are needed. We have 36,000 beds for chronic disease; of these, 28,000 are acceptable, 248,000 more such beds are needed. We have 468 acceptable health centers; we need an additional 1,853 such centers.

THE PROGRESS

It is now 16 months since the first state plan was approved. It is a little over 4 months since the last plan was approved. Of the 53 states and territories, all but one now have approved plans and have had allotments made for the fiscal years 1948 and 1949. You will recall that it was correctly anticipated that the first fiscal year of the program would be required for surveys and the preparation of state plans. Consequently, no construction funds or contractual authorizations were requested or made available by Congress during the first fiscal year of the program. The first allotment was therefore made on July 1, 1947. Let us now look at what has been accomplished in the past 16 months.

Thus far, i.e., up to October 29, 1948, 540 construction projects have been initially approved; that is, they have met the eligibility requirements and have only to raise funds, acquire site, and prepare plan and application before final approval. Of these projects, 135 have received final approval and are now under contract. The estimated total cost of all projects so far approved is $302,000,000. Of this, the federal share is $93,000,000, and the state or local share, $209,000,000. The value of the projects now under contract is $62,000,000, involving $19,000,000 of federal funds and $43,000,000 state or local funds, or both.

You will be interested in some further details concerning the projects thus far approved. Of the 506 projects initially approved as of October 1, 1948, 387 are general hospitals with 18,878 beds; 16 are tuberculosis hospitals with 2,019 beds; 26 are mental hospitals with 2,879 beds; 9 are chronic disease hospitals

with 642 beds; and 63 are health centers. The total beds contemplated in this group are 24,418.

Although Public Law 725 stresses the need for hospitals in rural areas and gives such areas preferential treatment, there was the feeling in many sources at the beginning of the program that perhaps the metropolitan centers would obtain most of the federal funds. Let us see now if this is the case. Of the 387 projects in the general hospital category, 211 projects with 8,807 hospital beds and with an average of 42 beds per hospital are in "A" priority areas; 74 projects with 441 beds and averaging 60 beds in size are in "B" priority areas; 53 projects with 3,295 beds and averaging 62 beds in size are in "C" priority areas. Only 49 projects with 2,465 beds are in higher than "C" priority areas.

As a further check on the rural nature of the proposed hospitals, let us look at the population of the several communities involved. Of the 308 new general hospital projects approved, 256 are in communities of less than 10,000 persons, and of these, approximately half—126—are in small towns or villages of less than 2,500 population. Only 52 projects are in communities of more than 10,000.

We are building under the program predominantly small hospitals. Thus, of the 308 new general hospital projects, i.e., exclusive of projects for making additions or alterations to existing hospitals, 184 are for hospitals with less than 50 beds.

SOME ADMINISTRATIVE PROBLEMS

After seeing what has been accomplished, it might be well now to look at some of the administrative problems which we have observed throughout the country. One of the most evident is that of inadequate state staffs. In those states that have been able to provide a comprehensive staff with all of the technical skills required, the program is reflected in an exceptionally high quality of performance. In a great many states, due to lack of funds, administrative staffs are small and inadequate to obtain the best results. These shortages, however, are gradually being remedied and the quality of administration is gradually improving right across the board.

The second problem, and probably the greatest—all things considered—is the present high cost of construction. One of the results of this situation is the tendency toward inadequate estimates on the part of local communities. Inadequate estimates produce a number of undesirable effects. They may mean the total abandonment of a project, the consequent waste of all the time and effort that has gone into the preparation of the project, not to mention the tying up of state and federal funds. The second result is the rejection of bids and another lengthy and time-consuming period in which additional funds are raised. The third result is the drastic curtailment of the original project, often to the detriment of the functional value of the institution.

In the light of experience gained on contract costs, I believe the state agencies are now in position to prevent many of the short estimates that have been coming in during the early phases of the program.

Another problem we have noticed is the delay in getting out plans and specifications after all other requirements have been met. This we have found is largely due to the large amount of work which most architects now have on their drawing boards. Every effort should be made to speed up this phase of the work.

CONTRACT COSTS

We now have enough experience behind us to have some idea as to the current cost of hospitals and health centers.

You will recall that the general construction cost index has gone up over 100 per cent since 1939. Hospitals, of course, are no exception. It has long been the general custom to think of hospital costs in terms of beds. This basis of estimate, however, has little or no value unless one is comparing identical hospitals, of which there are none. The cost per square foot is the only reasonable basis of estimating and of comparing costs. On this basis, we have found costs to be averaging about $18 per square foot, which includes the built-in equipment but does not include the movable equipment, architects' fees, land acquisition costs, and so forth. When these items are added, then the square foot cost averages around $22. There is a good deal of uniformity in these square foot costs throughout the country, although one does encounter spots or areas in which contracts or contract bids are considerably in excess. These areas can be explained on the basis of local situations, usually because there is so much work that contractors are not interested in the more difficult hospital jobs.

THINGS TO WATCH

It may be well at this time to point out certain pitfalls which may lie in the path of this program. One in particular is the possibility of lapsed funds. As you know, the contractual authority granted by Congress is not exercised until the final approval in Part IV is signed. There is, therefore, the danger of lapsed funds in the first year's contractual authority. Each year's allotment is, as you know, effective for that and the following fiscal year. There are therefore but 8 months left in which to exercise the contractual authority granted in the fiscal year 1948. Eight months is a relatively short time in which to raise funds and prepare plans and specifications. It would be wise therefore to consider lower priority projects without further delay, if necessary, to obligate 1949 allotments.

Health of San Francisco Chinese

The San Francisco City-County Health Department has recently analyzed some vital statistics for its 20,000 Chinese, who make up the largest Chinese population in the United States. Among the facts revealed by the 1948 figures are:

The pulmonary tuberculosis death rate for Chinese is 85 per 100,000; for the entire city, 35.1. But in 1931 the Chinese rate was nearly three times as great, 236.6. The Chinese suicide rate is 80 per 100,000; for the entire population, 23.8. The infant mortality rate among Chinese, 22.1 is lower than the city-wide rate.

In 1948, 63 per cent of Chinese births were to mothers with less than two year's residence, as compared to 33 per cent in 1947 and 10 per cent in 1946.

The Hospital Survey and Construction Program*

Environmental Sanitation

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ENVIRONMENTAL sanitation problems in today's national hospital program are a direct challenge to the public health engineers in this country. Before discussing the question of environmental sanitation in the hospital and the possible approaches to the problem, let us consider for a moment the magnitude of the task. It may be somewhat surprising to some that the "hospital industry" is one of the ten largest in the nation from the point of view of personnel employed, services rendered, and purchasing power. It represents an investment of approximately 6 billion dollars with expenditures amounting to some $2,400,000,000 per year. The 6,173 hospitals provided hospital care for approximately 18,000,000 individuals (16 per cent of the population) during the past year and employed some 900,000 full-time employees. Surely, an industry of this size having a direct relationship to the immedate welfare of so many individuals not only deserves but demands every assistance in order to achieve its ultimate goal—improvement of patient care. It is one of the few activities in which it is possible for the engineer to be identified with the care and treatment of the ill and infirm. Practically every other program with which he is associated is in the field of preventive medicine. It has been pointed out that the national hospital program should prove to be an effective instrument in breaking through the barrier which exists between the fields of clinical and preventive medicine. It will provide a mechanism whereby the workers in the field of public health may clearly demonstrate the benefits of their work.

The philosophy of those concerned with the administration of the Hospital Survey and Construction Act, requires the full use of the knowledge and techniques of the public health engineer to achieve complete success in the program and its ultimate goal—improvement of patient care. Thus, added responsibilities are being thrust on the profession for the solution of the environmental sanitation and related problems in our individual hospitals. The Act provides that the individual states (at their discretion) must establish minimum standards for the maintenance and operation of hospitals which receive federal aid. At the moment, all states with one exception have passed licensure laws or their equivalent empowering the state agency to proceed with the development of minimum standards and the licensure of the hospitals. In most instances, these laws have been extended to include all hospitals and related institutions, such action being entirely logical

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and justifiable. In the development of the minimum standards, those relating to the physical plant constitute a most important part and are of primary concern to the engineer.

There are two fundamental questions which have to be answered before an intelligent approach may be made to the problem of environmental sanitation in hospitals. First, what are the specific problems to be met? Second, how can they best be handled? A review of the licensure regulations of the states shows that the basic minimum standards relating to sanitation have been covered. Many desirable features have been omitted simply because they could not, at the present time, be considered as minimum requirements. Nevertheless, the more progressive hospitals are interested not only in achieving compliance with the minimum standards but in surpassing them, and it is in this field that a real service may be offered to both the hospital and the patient. This involves the extension of the engineers' activities into areas with which he has not been too intimately concerned in the past but which are related to the environment of the hospital.

In the limited time available, let us look at certain of the sanitary problems from the viewpoint of the hospital needs and the benefits which result from attention given to the sanitation aspects involved. For example, sanitary considerations alone may dictate a choice between two sites. One specific instance is recalled where two sites were under consideration, both satisfactory, with the exception that only one was served by the municipal water and sewer system and the other was not. The latter site had special appeal to the hospital board in that it was to be donated to the hospital. An engineering study soon revealed that the cost of installation of a water supply and sewage treatment plant and the continuing operational costs would more than offset the saving in site cost. The hospital board wisely made the obvious selection.

In cases where sanitary facilities must be provided to serve an individual hospital, they should be designed and operated in accordance with the standards of the respective state health departments. As a rule, the systems have followed the general pattern quite closely. Nevertheless, there is a question as to whether the highly infectious character of hospital sewage may require additional treatment beyond that given to ordinary domestic sewage.

Preliminary studies of a sewage treatment plant serving a tuberculosis institution indicated that the tubercle organisms were capable of surviving the treatment process which consisted of primary sedimentation, biological treatment, and secondary settling. The studies indicated that final chlorination of the effluent, in the neighborhood of 20 p.p.m., was necessary to destroy the tubercle organisms. The proportionately high periodic concentration of laundry wastes in the hospital sewage may upset the biological balance in the treatment process. One instance was observed where a trickling filter had been rendered completely inoperative by the coating of the rock with insoluble soap curd deposited by the laundry wastes.

It is obviously ridiculous to protect the water supply from its original source to the building and then to subject it to various hazards of contamination from a poorly designed and installed plumbing system. Field studies have proved conclusively that it is not uncommon for negative heads and vacuums to occur in the building water distribution system as a result of breaks, shut downs and drainages for repairs, or inadequately sized pipes. Strangely enough, few plumbing codes have included provisions for the proper sizing of the distribution system which require consideration of the pressures available in the supply main, the

characteristics of the water from the standpoint of corrosion or caking of the piping materials, future installation of fixtures (a common occurrence in most hospitals), and the hydraulics of the system. Sole dependence cannot be placed on pressure alone to protect against backflow of waste material from plumbing fixtures or devices but it does minimize the hazard. In addition, adequate pressures are necessary for proper operation and the maintenance of the fixtures in a sanitary condition, and the reduction of noise caused by the flow of water in the system which is particularly objectionable from the viewpoint of the patient. A striking example in this respect was found in a hospital survey where no water could be drawn from a number of third floor fixtures when the washers in the laundry were being filled.

Since vacuums can and do occur, it is essential that the water inlets to the fixture terminate a safe distance above the highest possible water level in the fixture. In instances where this is not possible, backflow preventers must be used. These devices are mechanical and, therefore, subject to failure. Overhead drainage lines should be located so that leakage will not cause serious consequences. Such lines should never be exposed in food handling and storage areas. Sterilizers, dishwashing machines, refrigerators, food handling equipment, and similar devices should not be directly connected to the building drainage system because of the possibility of a stoppage in the drain resulting in the backing up of sewage or waste material. One other point peculiar to hospitals is the need for protection of certain types of equipment against possible contamination by the potable water supply. This necessitates the use of leak-escape proof valves on the various types of water-supplied sterilizers.

Unfortunately, too little attention is paid to the location and type of fixtures provided for the accomplishment of specific tasks in the hospitals. Inadequate handwashing facilities in patient and work areas may result in breaks of technique or unnecessary loss of time. These facilities should have the proper type fitting, wrist, elbow or knee action controls, to prevent the fixtures from becoming a vehicle for the transmission of pathogens. Proper location and numbers of fixtures will permit more effective use of the time of hospital personnel. Present accepted practice provides for the installation of lavatories in the patients' rooms and in a wall recess in the hall of each nursing unit. In this connection, consideration should be given in any hospital survey to the adequacy both in number and convenience of location of the toilet and rest room facilities for all personnel.

Food handling in hospitals is somewhat different from that in the conventional restaurant because of the transportation problem of the food from the kitchen to the patient which requires additional handling and resultant hazard of contamination. Because of the increased opportunities of contamination and the possible lower resistance of the patients to food infection, increased emphasis on proper food handling in hospitals is necessary. In using survey guides developed for other types of establishments, due consideration should be given to the special problems posed by hospital food service. Numerous instances exist where additions to the hospitals have overtaxed the food service facilities. In these cases, there is a real opportunity to devise procedures whereby the facilities may be used to better advantage pending the reconstruction or enlargement of the kitchen. The hospital should be informed as to the salient points to be observed in the design and construction of all food handling equipment prior to purchase. Considerable ingenuity will be required of the surveyor to adjust his recom-

mendations for improvements to fit the facilities available and the specific needs of the hospital. The problem of food handling and dishwashing in contagious or isolation areas must be given special attention.

Garbage and waste disposal may be handled in a number of different ways. The storage of these materials on the floor, facilities for transporting to point of disposal, and the method of disposal are all items which deserve attention. Improper facilities may result in nuisance conditions and provide breeding places for vermin. Special handling of infectious wastes such as those from surgery or isolation areas is necessary for the protection both of the hospital personnel and patients as well as those on the outside. It is a generally accepted fact, for example, that garbage from isolation areas should be kept separate from the other garbage and incinerated or boiled to destroy any pathogenic organisms present. In general, incineration of all garbage and rubbish is the most satisfactory method of refuse disposal. When this is not feasible, other methods such as the sanitary land-fill method might be used to good advantage. The advent of garbage grinders may simplify the problem of garbage disposal. With these devices, the garbage may be disposed of immediately, thereby eliminating the problem of storage and disposal.

No sanitary survey of an institution would be complete without consideration of insect, rodent, and vermin control. Proper screening and use of insecticides are necessary. Today, with the new insecticides available for use, instances of vermin infestation are inexcusable. Hospitals may either contract for services from a pest control operator or initiate their own program, in which case instruction of the personnel in the proper use of insecticides may be necessary. Our hospitals should be of rodent-proof construction. The elimination of rat harborages through proper construction of the facility combined with proper maintenance and operation will elminate the rodent problem. By extending this basic concept, would it not be possible to "vermin-proof" our hospitals through proper construction of the building and equipment?

The aforementioned problems have been recognized as problems of primary concern to the engineer. What of some of the other problems in the hospital which might interest the public health engineer? Housekeeping with its attendant problems of maintaining the hospital in a proper sanitary condition is one which should receive the attention it deserves. It would be reasonable to assume that the surveyor might make specific recommendations as to frequency and procedures to be followed in the cleaning of floors, walls, and ceilings. Improper methods will not only result in poorly cleaned floors and other surfaces but may result in damage to the covering. Cleaning procedures and materials should be adjusted to the surface being cleaned. For example, the cleaning of the various floor coverings, terrazo, asphalt tile, rubber tile, linoleum, cork, varies considerably.

The question of heat, light, and ventilation presents many problems which have not been satisfactorily answered in all respects. A critical study of the hazards of recirculation of air in the hospital from the viewpoint of transmission of infection should be made. While the use of ultra-violet irradiation and glycol vapors is still in the experimental stage and their general use has not been recommended, there may be special areas in the hospital where air disinfection may be indicated. The oiling of floors and oil treatment of linens and blankets might be desirable in the control of air-borne infections. This is particularly true in contagious areas such as tuberculosis wards. An added

advantage is that by the suppression of dust, housekeeping procedures may be simplified. One point to keep in mind, however, is possible fire hazard particularly in buildings of frame construction. Lighting relates directly to the comfort of the patient, prevention of accidents, and maintenance of proper sanitation in the hospital. Surveys should include a study of the adequacy of the illumination in the different areas with consideration given to the prevention of glare and the avoidance of excessive brightness ratios. Illumination and brightness meters can be used to good advantage in the survey. The use of color in the hospital on walls, ceilings, and equipment is directly related to the comfort of the patient. Certain basic principles have been established which should be familiar to the public health engineer.

There are two other fields of activity which are not normally considered to fall within the purview of the public health engineer. These are accident prevention and fire protection. Both are intimately related to the safety of the patient and hospital personnel. Accidents result in economic waste which the hospital can ill afford. Arrangements have just been completed between the American Hospital Association and the National Safety Council through which training materials and technical information will be made available to the individual participating hospital. The need for prevention of accidents in hospitals is so evident that little elaboration on the subject is necessary. Any survey of the physical plant would be incomplete without consideration of the question of fire protection. In many states, this is the specific responsibility of the fire marshal. However, the engineer should be in a position to assist in the enforcement and carrying out of fire protection measures, possibly as a representative of the agency having primary responsibility in this field.

It is recognized that this list of items of interest from the environmental sanitation aspects of hospital construction and operation is incomplete. Nevertheless, it may serve as a guide in rendering help and assistance to the hospital.

The objective of surveys of the type described is to secure necessary improvements. It is not possible to single out the physical facilities and environmental aspects and discuss them as separate entities. They are only some of the important facts relating to hospital operation and must be considered in the light of the overall needs of the hospital. In many cases, the reports on the results of the survey have included a multitude of recommendations for improvements which are beyond the ability or the financial resources of the hospital to carry out. The final result being that little is accomplished. The desirable approach involves having the survey team make a critical study of the hospital's needs and then establish a continuing program of improvement, with items relating to patient safety receiving first consideration. A report of this nature will be a useful tool to the hospital administrator and his board in planning and scheduling of work.

It would be well to stress the point that whenever possible all surveys by the state agency should be made in coöperation with the local health agency representatives. The local agency will be in a better position to render the follow-up services involved, such as schools for food handlers, inservice training program, collection of samples, and periodic check surveys. Where the administrator or other administrative official accompanies the survey team, they may be of mutual assistance to each other.

In conclusion, the challenge and opportunities of the public health engineer to render a service in the hospital field are real and pressing, and are most important in the total health program of the nation.

The Quality of Medical Care in a National Health Program*

A Statement by the Subcommittee on Medical Care

INTRODUCTION

IN October, 1944, the American Public Health Association officially adopted a general policy statement on "Medical Care in a National Health Program."[1] One of the three basic objectives recognized in the statement was: "Such a [medical care] program should insure that the services provided be of the highest standard and that they be rendered under conditions satisfactory both to the public and to the professions."

Throughout the entire statement, emphasis was placed upon the quality of the health services to be made available.

It is the purpose of this supplementary statement to present the essential components of medical care of high quality and the methods by which these standards can be approached in a national health program.

The quality of medical care depends upon more than intangible, philosophical attitudes or particular personality traits on the part of those who render services. More is involved also than the technical content of the individual practitioner's work—basic as this may be. A high standard of care includes very definite scientific and organizational elements which can be incorporated into planning and which eventually will submit to measurement.

Since standards of health service reflect the ever-changing social and scientific patterns of the times, there can be no permanency to any particular set of qualitative standards for medical care.[2] There is every reason to believe that scientific advances and progress in standards of living will take place in the future as in the past. A national health program must assure full freedom of experimentation and change in both the science and the organization of health service. It is recognized at the outset, therefore, that any concept of good medical care must be conspicuously dated.

SCOPE AND CONTENT OF AN ADEQUATE MEDICAL CARE PROGRAM

Objectives

The objectives of medical care in a national health program must include:

1. Promotion of positive health.†
2. Prevention of disease, disability, and attendant economic insecurity.
3. Cure or mitigation of disease.
4. Rehabilitation of the patient.

It is recognized that medical care is only part of a total health program.

* This statement has been prepared by the Subcommittee on Medical Care of the Committee on Administrative Practice as a contribution to current discussions of medical care in a national health program. The Subcommittee believes that particular emphasis needs to be placed on factors affecting the quality of medical service in order to insure sound planning. While the statement is focused on medical care in a national health program, the principles set forth are considered to be applicable to all types of organized medical care programs, including voluntary and public plans at the local, regional, state, or national level. Discussion and comments by interested readers are cordially invited.

† The Constitution of the World Health Organization defines positive health as ". . . a state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity."

Thus, most measures for the promotion of health are broadly social or educational in character, relating to employment, housing, nutrition, economic and social security on the one hand, and to recreation and physical and health education on the other. Also, prevention of much illness, at least for water- and milk-borne and occupational diseases, can be accomplished without recourse to individual service by medical personnel. It is essential, however, that the medical care aspects of a national health program be planned with the total picture in mind. Such planning makes it possible to orient medical service not only toward treatment of disease but also toward promotion of health, prevention of illness, and rehabilitation of the patient in a social as well as a medical sense.

Quantitative Adequacy

"Adequate" medical care must meet both quantitative and qualitative standards. Quantitative adequacy involves both comprehensiveness and balance. This implies the provision of all services required to achieve the above named objectives, in proper amounts and with effective timing. Essentials for such quantitative adequacy include:

1. Participation of medical, dental, nursing, social service, technical, administrative, educational, and supporting personnel sufficient to provide the full range of modern scientific care.
2. Provision of care in home, office, clinic, health center, general hospital or specialized institution, according to the best interest of the patient.
3. Provision of drugs, appliances, laboratory services and other aids.
4. Application of all relevant services to illness, injury, defect, and maternity—and to preventive care for the apparently healthy.
5. Education of the public as to the wisest and most efficient utilization of all available health services.

It is recognized that services are frequently inadequate at the present time and cannot be uniformly provided for everybody, everywhere, when a national program is instituted. The policy must be accepted, however, of providing the maximum that is feasible through the use of existing resources, and of extending services as rapidly as medical and financial resources become available.

Qualitative Adequacy

The components of qualitative adequacy may be considered as fivefold:

1. Able, well trained, and efficiently functioning personnel.
2. Facilities and equipment which meet high technical standards.
3. Health services which encompass the best knowledge of modern medical science, and which insure availability and continuity of care.
4. Adequate financial arrangements, making possible the timely provision of all indicated services, without economic deterrents for patients or practitioners.
5. Sound administrative organization and operation, designed to promote efficiency and economy of service.

Each of these factors is, of course, inseparably related to the rest. Effective health service requires competent personnel and facilities of high standard. Sound financing is a *sine qua non* of any successful program. Subsequent discussion will consider the organizational methods by which these five basic components may be related to each other, and to the achievement of the goal of high quality.

COMPONENTS OF GOOD QUALITY

Professional and Related Personnel

The quality of medical care is dependent on the competence of those rendering a highly personal service. Obviously, therefore, the standard of care in an organized program will reflect the individual abilities of the participating

professional personnel. Such professional competence, in turn, depends upon careful selection of trainees, adequate educational programs, and desirable patterns of practice. If, thereby, competent personnel with sufficiently diversified skills are available in adequate numbers and in equitable patterns of distribution, the first criterion of quality will be satisfied.

PHYSICIANS

Selection and Education

Pre-professional college education can be redesigned to prepare more broadly oriented students whose knowledge of the humanities and the social sciences will improve their later application of the natural and medical sciences.

Selection of medical students should be based increasingly upon objective appraisal of broad qualifications as suggested by the newer techniques of scientific testing,[3] and upon evaluation of applicants without bias on grounds of sex, race, religion, or nationality.[4] The impersonal—but nonetheless formidable—barrier of prohibitive student costs threatens to restrict the profession to members of upper income groups, unless increased financial aid is made available to students and to medical schools.[5]

Undergraduate medical education must be continually appraised in terms of the changing requirements of the times. The most pressing current need is for proper emphasis upon the interrelationships among the various academic departments,[6] and for production of physicians who are aware of the social as well as the scientific responsibilities of their profession.[7] Pediatrics, psychiatry, geriatrics, and preventive medicine all need strengthening in the curriculum. No medical student should be graduated without study of the psychological, social, economic, occupational, and other aspects of "total" patient care. No graduate should lack an introduction to the principles of medical care planning and organization. Such instruction is best facilitated when the school participates actively in organized community programs of health and medical care. A major role of the medical teaching center of the future will be found in its relationship to the regional health service network described below.[8]

Graduate education in medicine is currently characterized by an extreme unevenness of quality. Less than one-third of hospitals approved by the American Medical Association for intern and resident training are affiliated with medical schools. Wider affiliation of teaching centers with training programs of small hospitals could produce major contributions to the quality of medical service throughout the nation. Greater emphasis seems also needed upon the extra-hospital phases of medical education. The graduate should have experience in outpatient service, home care, social service, public health practice, rehabilitation, and rural and small community hospitals. This, too, may perhaps best be achieved within the framework of a coördinated hospital plan.*

Postgraduate education for practitioners of medicine is an important phase of quality of care. Programs for postgraduate education can be developed most effectively through: (1) special financial provision for postgraduate studies, and (2) coördination of teaching centers and outlying community hospitals in functional regional networks. Within such regional programs, consultants and instructors from the teaching centers can travel out for local meetings, clinics and ward rounds; practitioners in outlying areas can move to the regional centers for formal courses, train-

* Medical schools currently engaged in planning for such graduate education include Colorado, Medical College of Virginia, Michigan, New York University, Rochester, Tulane, and others. Descriptive literature can be obtained from the schools.

ing conferences and demonstrations.[9] *

The financial problems in medical education mark the limiting factor in the practical attainment of higher goals in both undergraduate and graduate education. Most university authorities and medical educators are now stressing the critical need for more adequate financial support of medical and related professional schools.[10]

Allocation of funds for education and training within the financial framework of the medical care program can do much to elevate standards of professional care. Special emphasis can be placed on the support of postgraduate education so that economic deterrents do not operate and teaching institutions are enabled to develop the needed resources. Funds might be particularly applied to training those classes of health workers now in short supply.

Such steps in themselves, however, could not solve the entire financial crisis in which medical education now finds itself. Carefully designed support to institutions and to students is needed on a national grant-in-aid basis.

Medical Licensure

The lack of uniformity in state licensure provisions and of sufficient reciprocity among the states has been a deterrent to the achievement of national standards or an improved distribution of physicians. In some states, rigid or unusual prerequisites for licensure prevent desirable flexibility and adaptability in medical education. Achievement by the states of greater interstate reciprocity and similar high standards of licensure, or common acceptance of the diploma of the National Board of Medical Examiners, would greatly ease this situation.

It has also been suggested that the qualifications of licensed practitioners be reviewed periodically in order to safeguard the quality of care provided. This proposal deserves further study and consideration.

Patterns of Medical Practice

The patterns of practice among physicians affect both the volume and the quality of the medical service rendered. It is a basic principle of planning for medical care of high quality that physicians and other personnel should be closely associated, operating together as a balanced medical team. The greatest single deterrent to good service is the isolation of the individual practitioner from his colleagues. The patterns of practice should, therefore, be such as to enable practitioners to utilize readily the skills of consultants and other specialized personnel, and to benefit from the stimulation of continuing professional contacts. They should have easy access to library and other educational resources, be free from the burden of non-professional chores, and have sufficient time and incentive to read, attend lectures, visit medical centers, and otherwise improve their knowledge and abilities.

Medical service of good quality is best promoted by the closest possible functional relationships between general and special physicians. The general practitioner can serve as the key person in the treatment of the individual patient, concerned with the total aspects of the case—medical and social—and freely referring the patient for specialty and consultant care when needed. Barriers to indicated referrals and financial irregularities in connection with such activity can be removed by sound administrative policy. This requires elimination of those financial factors which promote fee splitting and rebate practices on the one hand, and those, on the other, which deter the family practitioner from calling in a consultant because of additional cost to the patient or fear of "losing"

* Significant postgraduate programs have been developed in the regional plans of the Bingham Associates Fund based in the New England Medical Center (Boston) and of the Council of Rochester (N. Y.) Regional Hospitals.

the patient. Modification of the traditional fee-for-service method of compensating physicians is strongly indicated. Methods of remuneration should be such as to be equitable both to the general practitioner and the specialist, and to encourage proper referral. There should also be careful experimentation with full-time salaried consultants and with routine consultation procedures in selected circumstances.*

In clinics and hospitals, the goal of closer relationships between general and consulting physicians is approached by the creation of efficient referral procedures, definite appointment systems, interdepartmental conferences, and the like. With the receipt of complete consultation reports, the general practitioner can usually continue with the management of all but the most specialized therapeutic procedures.†

It is obviously impossible for rural areas and very small communities to support the full-time services of all necessary medical specialists. Improved general practitioner-specialist relationships are attainable through the regional organization of medical services. Under such a plan, physicians of smaller communities become functionally associated with specialists in larger centers. As a result, referral of patients is facilitated and there are more local requests for visiting consultants. In effect, the rural practitioner becomes a member of a regional "medical group."

Increased rates of payment for specialty service in an organized medical care program should, in the interest of quality, be limited to physicians who meet objectively established standards of special qualification. Overemphasis on American Specialty Board certification can be avoided if ample provision is made for acceptance of equivalents in training and experience, to be evaluated by competent professional councils. One approach to this problem is that of the Health Insurance Plan of Greater New York, in which specialists are designated on any of three bases: Board diplomas, teaching staff appointments, or individual qualifications.

The current practice of direct choice of specialists by the often confused patient represents an undesirable form of self-diagnosis and frequently involves much waste of time and money. Channeling of specialty referrals through a general physician or a specialist to whom the patient has been previously referred (including provisions for such referral in special cases by the medical administrator in the local area) would avoid many of the inefficiencies of unsupervised medical "shopping." Special procedures would, of course, be necessary for emergencies and for the somewhat different circumstances of pediatric, obstetric, and similar specialties where the patient can properly make a direct selection of the specialty.

Diagnostic aids—Modern scientific medicine requires that the able and well trained physician have access not only to consultants but also to the technical diagnostic and other laboratory procedures so essential to clinical accuracy. Despite the development of well equipped and well staffed laboratories in the better medical centers, many practitioners are not connected with hospitals; many have no ready access to private laboratories or are located in isolated rural and semi-rural areas. The office laboratory is no longer capable of supplying all the required aids to the modern physician.

A significant development would be the establishment of integrated diagnostic facilities throughout a state or regional area, available to all practitioners in the vicinity. Such diagnostic facilities might be best developed as part of

* Such as Caesarian section, amputation, etc.

† Efforts to enhance the prestige of the general practitioner have included establishment of General Practice Sections in hospitals and medical societies. A "specialty board" in general practice is also under discussion.

public health centers or community hospitals and clinics, and would serve their purpose most efficiently if correlated with the overall functions of public health agencies and regional hospital networks. This could effectively promote the development of proper diagnostic assistance for those rural practitioners whose small communities cannot support extensive laboratory facilities. Specimens, pathological tissues, x-ray plates and the like could then be sent to the coöperating district or regional centers, while periodic visits could be made to local communities by pathologists, radiologists, and associated technicians from the larger centers.

It is essential that a national health program include the services provided by diagnostic laboratories, and such facilities should be adequately reimbursed by the plan—unless established under separate public auspices.[11]

Group Practice—The efficiency and quality of medical service rendered by a coördinated group of qualified general physicians, specialists, and auxiliary personnel is being increasingly recognized. Group medical practice facilitates coördination of the personnel and facilities essential to medicine of high standard. It provides ready access to consultants and the technical services of trained auxiliary personnel, and permits full use of complex laboratory, x-ray, electrocardiographic and other diagnostic facilities.[12] The constant intra-group contacts in professional work are a primary stimulus to continuous education. Professional supervision of professional services can, moreover, be developed effectively in an organized group, while such quality controls are difficult to maintain in individual practice.[13]

Group practice is advantageous to the administration of a medical care program in a number of ways. More service can be rendered per unit of expenditure by groups than by individual practitioners, as a result of economies in organization of personnel and equipment. Overhead costs of operation are reduced. Administrative detail is simplified by the integrated structure of the service unit.

The effectiveness of the group practice method is further enhanced through the common use of a central well equipped facility—hospital or health center—as the base of operations for the group. Here all needed personnel and equipment can be concentrated for the most efficient service to the public. Wasted time and effort on the part of patients referred from one clinic or specialist to another can be avoided. Close relationships with public health and hospital services can be fostered. Wherever feasible, medical groups should be affiliated for teaching and research purposes with nearby medical schools.*

The very real limitations and possible abuses of group practice are not to be minimized.[14] Unless a broadly trained practitioner has overall responsibility for the patient, there is danger of overspecialization and excessive referrals within the group. Hurried and impersonal work should be avoided in group practice as well as in individual practice. Financial arrangements satisfactory to all group members are sometimes difficult to work out, as are methods of supervision and control. With sound organization, however, group practice can function to the decided advantage of both physician and patient.

A forward looking national health program should give every encouragement to the growth of group medical practice. Clear provision should be made for the participation of qualified groups in the provision of services. Such groups should receive payment at the same rates as non-group practitioners,

* For example, the New York University and Montefiore Hospital (Columbia University) units are affiliated with the group practice service of the Health Insurance Plan of Greater New York. The Hitchcock Clinic is similarly closely associated with the Dartmouth Medical School.

whether on a fee-for-service or capitation basis, the total amounts being determined by the range of services provided and the number of persons served. Any economies achieved by the group practice method should not be justification for a rate of payment to medical groups lower than that to non-group practitioners. Rather, such economies should result in improvements in the quality of service provided by the groups and in increased incomes for the physicians and other personnel associated with them. Medical groups should be free to decide their own internal methods of professional remuneration. Because of the intimate association of its members, a medical group is in an especially advantageous position to appraise competence among its physicians (and others) and to reward such competence in a fair and discriminating manner. With this desirable flexibility of remuneration, a group's internal arrangements can be made especially conducive to improvements in quality of care.

A national health program might well offer assistance in the form of grants to public and non-profit agencies and long-term loans for capital construction and equipment to such professional groups as give promise of increased efficiency, economy, and quality in the provision of services under the program.

DENTISTS

All of the principles enunciated above with respect to medical personnel are pertinent to the dental aspects of health service of high quality. Dental care should be included in the services provided in a national health program to the extent that available resources of dental personnel make possible. The current severe shortage of dentists and auxiliary dental personnel, however, necessitates a temporarily limited horizon for the provision of dental care to the public.[11] Current emphasis must be directed to preventive and protective dental care for children and to essential therapy for adults. Concurrently, a threefold attack on the overwhelming problem of dental disease in the nation can be made by: (1) training larger numbers of dentists and other dental personnel; (2) use of multiple chairs by dental practitioners and the performance of subsidiary dental functions by auxiliary personnel under professional supervision in order to increase the number of patients who can be served by a dentist and to achieve reductions in the unit cost of dental service[15]; and (3) increased research into the causes and methods of preventing and controlling the major dental disorders. Utilization of new types of auxiliary personnel capable of carrying out certain dental functions has been proposed many times in the past and is now receiving more favorable attention.[16]

Regionalism in health planning has the same application to dental as to medical practice, and the dental specialist should be an integral part of every comprehensive medical group, clinic, and hospital service.[17] Financial aid for education from public sources should include the professional dentist, the dental hygienist, and other auxiliary personnel—trained together for coördinated team functions.

NURSES

Services of professional and practical nurses form the third essential of the modern medical team. Nursing education programs should be planned in conjunction with known and predicted community needs for all phases of nursing service. The present great gap between needed nursing services and available nursing personnel emphasizes the importance of this consideration.

Education for professional nursing should be broadened to include more adequate academic preparation; experience in community, home, and small hospital nursing; and emphasis upon

the social and psychological aspects of patient care. Opportunity should be provided for the advanced training of needed supervisors, teachers, public health nurses, and specialists.

An excessive number of existing schools of nursing are low in student enrollment and affiliated with relatively small and isolated hospitals. Here the caliber of teaching is frequently poor and the demand for nursing service from the students is undesirably high. The quality of nursing care in general can be enhanced by greater concentration of professional nursing education in university-affiliated teaching hospitals with large enrollments.[17]

Opportunity should also be provided for adequate education of practical nurses. It is becoming increasingly recognized that planning for nursing education should take into account the need for nursing service at different levels in order to meet present and future demands for health services and care of the sick.[18]

While the present shortage of nursing personnel emphasizes the need for nurses' aides and orderlies to carry out routine mechanical duties, such allocation of duties is even more important from the viewpoint of increasing the efficiency and improving the quality of nursing service. Provision should also be made for the special nursing of single or grouped hospital patients whose clinical condition warrants such care. This would make it possible to curtail the wasteful use of private duty nurses; it would release many of these nurses for other types of service and would improve the quality of care by providing concentrated nursing care where it is medically indicated. In appropriate home care cases, nurses can be helped to provide more effective service through the use of trained and supervised housekeepers and "mothers' helpers."

State licensure for both professional and practical nurses is essential. The extent to which such licensure can be standardized, in ways similar to those recommended for physicians, will determine to a considerable degree the effectiveness of attempts to achieve a more rational distribution of nursing personnel among the states.

Standards for participation of both professional and practical nurses and of housekeeping aides should be established in a national health program. Home nursing and special duty nursing in the hospital should be paid for, but only when medically indicated. The inclusion of nurses and schools of nursing in the program of grants-in-aid for education and training is imperative if necessary improvements are to be achieved. Refresher and postgraduate education is as significant for nurses as for physicians and dentists.

MEDICAL SOCIAL WORKERS

The influence of social factors in the production of disease and in restoration of health is of great significance. No medical service plan can achieve high standards without the well integrated services of fully qualified medical and psychiatric social workers.[19] These workers play an essential role in determining the social factors which may affect the response of a given patient to illness and to medical care, and in assisting the patient to use the medical services of the community to achieve the optimum rehabilitation possible in terms of his physical and social capacities.

Social service should be utilized by clinics and practitioners as well as by hospitals and health agencies. The activities of the public health nurse and the medical social worker should be closely coördinated. The organized group practice of medicine affords the most practical opportunity for social work to permeate the day-to-day management of ambulatory and domiciliary medical cases.

MEDICAL ADMINISTRATORS

Good medical service depends constantly on the efficient, orderly, economical and resourceful management of the administrative phases of the program. Qualified professional personnel, however, are not necessarily experts in the field of medical, hospital, and public health administration.

The proper training of administrative personnel—both lay and professional—is as essential as sound preparation for any of the clinical specialties. Graduate courses in medical administration should be further developed, based upon a solid grounding in the health sciences and integrated with practical field training. The university schools of public health seem to be the proper places for the needed expansion of such training efforts.* A national health program should contain carefully formulated standards for administrative personnel, and should include such personnel in the program of grants-in-aid for education and training.

PHARMACISTS AND DRUG THERAPY

Modern advances in chemistry, pharmacology, and serology have produced an extensive armamentarium of therapeutic agents essential to medical care of high quality. To insure the successful use of these therapeutic agents in a national medical care plan, competent and scientifically trained pharmacists should be component parts of the medical service team, and should be active participants in the organized medical care program. With their coöperation, the evil of uncontrolled use of patent medicines and home remedies can be greatly reduced, and drug therapy more nearly limited to the utilization of ethical products listed in a professionally compiled formulary or included in one of the official pharmacopoeias. Good quality of care also requires rational and judicious use of all medicines. Multiple "shotgun" prescriptions should be avoided. The routine use in prescription writing of basic pharmaceutical compounds and non-proprietary names should be strongly encouraged.[20]

Administrative procedures which control the multiple abuses of drug therapy are essential to any medical plan of good quality. Payments from public funds should be limited to drugs provided upon prescription and should be confined to professionally approved items. Administrative and financial considerations require limitation of payment for drugs to preventive, long-term, and especially valuable and expensive medicinals.[11]

OTHER HEALTH PERSONNEL

Utilization of other professional health workers under competent medical supervision is essential to service of high quality. The full range of medical care today includes the services of the physical therapist, the clinical psychologist, and the occupational therapist, as well as the optometrist and the podiatrist. Each of these groups has a significant contribution to make in the treatment and rehabilitation of the patient. The importance of interprofessional teamwork and closer coördination of the activities of all types of health personnel cannot be overemphasized.

SECTARIAN PRACTITIONERS

Many factors have combined to encourage the appearance of large numbers of sectarian practitioners, quacks, and charlatans and their use in the provision of care to the American public. To the extent that these partially trained and untrained individuals render service to patients, the quality of the system of care degenerates. Factors which underlie the existence of such practitioners

* Organized courses in medical care administration are currently offered at the Schools of Public Health at California, Harvard, Johns Hopkins, Michigan, and North Carolina. Special training for hospital administrators is available at California, Chicago, Columbia, Minnesota, Northwestern, Toronto, Yale, and other university centers.

include: (1) shortages of medical practitioners, (2) maldistribution of professional personnel, (3) high cost of modern medical care, (4) inability of medical science to cope adequately with many problems of chronic disease, (5) failure of many practitioners to consider properly the emotional and social factors in medicine, (6) discriminatory practices which prevent minority population groups from receiving adequate medical services, (7) looseness of many state laws governing medical licensure, and (8) inadequacy of health education.

High standards of service in a national program require efforts to control the activities of sectarian practitioners by:

1. Elimination of all untrained practitioners, such as chiropractors, faith healers, naturopaths, and others, from participation in the payments for health services to individuals under the program.
2. Elevation of the educational standards of those groups now close to the concept of scientific medicine, as are certain groups of osteopaths, through financial and technical assistance to approved schools. This could make possible eventual incorporation of such personnel and their teaching institutions and hospitals into the regular ranks of medical personnel serving the public.

RESEARCH

A fundamental component of medical care of high quality is the constant and unfettered development of research studies in natural science, clinical medicine, social and economic aspects of disease, preventive methods, and administration.[21] The many unsolved problems in prevention and control of disease and in methods of medical care organization require the fullest possible research activity on the part of persons involved in the service program as well as those devoting full time to investigative work. A national plan for medical care should promote a better quality of services by providing opportunity within the program for professional and administrative personnel to utilize its operations and facilities for research purposes.

HOSPITALS AND RELATED FACILITIES

Able, well trained, and efficiently organized professional personnel can render services of high quality only when they and their patients have easy access to modern medical facilities which meet scientific standards and are efficiently coördinated for service. These should be developed through careful community and regional planning, and must be supported by greater public and private financing, with the goal of providing an adequate number of balanced and equitably distributed facilities.

HOSPITAL STANDARDS

Although existing professional associations have made real progress in elevating standards of hospital care, serious gaps still persist. Only two-fifths of all hospitals have the approval of the American College of Surgeons, and only one-sixth are approved by the American Medical Association for intern and resident training.[22] Proper standards and qualifications have been worked out in detail for very few of the special types of hospitals.[23] Uncontrolled and frequently inadequate proprietary institutions still exist in many communities—and indeed are increasing in some places for many of the same reasons that underlie the prevalence of quack practitioners and the use of patent medicines.

It is essential to the operation of a sound medical care program that careful standards for the approval of all types of health facilities be developed. The official health agencies of most states are now empowered to inspect and license general hospital facilities. The state agencies should supplement enforcement of licensure standards with positive efforts to aid the poorer hospitals in improving their facilities and meeting the conditions for approval.

Competent hospital consultant personnel are needed for this function. The private professional organizations should expand their activities in developing and promulgating general standards as well as special certifications necessary to the advanced educational and professional activities of the better hospitals. The role of the American Hospital Association in the formulation of the "model law" for state hospital licensure is an example of the responsible discharge of such professional obligations.

Where no licensure standards exist or where existing standards are not applicable or adequate, the administrative agency in a medical care program should formulate basic requirements for participation of hospitals.

REGIONAL COÖRDINATION

There has been extensive development of plans for the regional affiliation of rural, semi-urban, and metropolitan hospital facilities. The Public Health Service, the Commission on Hospital Care, various foundations and universities, and others have laid the conceptual groundwork for this regional approach to the many vexing problems of medical care, medical education, and hospital service.[24] This approach calls for the functional coördination of all health facilities in a region to form a network based on natural geographic lines and medical service areas. Outlying rural health centers and community clinics are related to small community hospitals in the more populous localities. These in turn affiliate with larger district hospitals, and all converge on the teaching institutions of metropolitan centers. Public health departments, nursing homes, special hospitals, and other facilities are integrated in the system at appropriate levels.

The network involves, as indicated previously, a two-way functional flow of medical services, professional trainees, consultants, diagnostic laboratory aids, and the like. In this way, the limited resources of rural and suburban facilities can be efficiently supplemented by the readily accessible services of district and base centers. Continual referrals, training, supervision, and technical assistance all serve to maintain a high level of professional quality throughout the region.[8, 17]

This principle of efficient regional coordination of medical and hospital services should be fundamental in the design of a national health program. Administration of the program should be decentralized to functionally sound regional areas and local health districts which take into account the natural flow of trade and medical service. Effective coordination of hospital regions and local public health districts could thus be implemented.

Once a national program managed to achieve the removal of financial deterrents to medical mobility within a region, any interested area would be better able to arrange the necessary service affiliations between metropolitan and local hospitals, between medical center specialists and small community practitioners, and the like. Funds allocated to peripheral communities would be available to pay for those laboratory, consultant, and other services obtainable only from the large centers of the region. Under a national plan, most or all residents of a region would be eligible for services at any level of the network, thus eliminating one of the most important impediments in current regional plans—the lack of adequate financial arrangements for purchasing the services available at all levels.

A national health program can assist teaching centers to assume their key rôle in the regional medical care system through educational grants-in-aid as discussed previously. Training stipends for professional and technical personnel would enable those in outlying areas to take full advantage of the educational

opportunities in the more highly developed hospital and related resources of the region. Grants-in-aid to health departments, universities, and other public and non-profit organizations should be made available for assistance in the planning and development of coördinated hospital and health center systems.

HOSPITAL STAFF

General elevation of medical standards requires the closest possible contact of all practitioners in the community with the hospital facilities that are available. Good care is impossible to provide in isolation from the consultants, laboratories, equipment, and other facilities of the modern hospital. It would seem desirable, therefore, to reverse the accustomed "closed staff" arrangements and allow all licensed practitioners to utilize the hospital, but they should be restricted to activities within their scope of competence and constantly supervised and aided in their work by the whole professional staff of the institution. This would contrast favorably with the present custom of forcing the least able, the least popular, or the late-arriving physicians into total isolation from the benefits of modern hospital centers. As more experience is gained with open staff organization, standards for hospital participation in the national program might reflect this principle.

Full-time Staff

A growing tendency is discernible toward the establishment of full-time hospital staff nuclei, whose salaried members constitute an effective group practice unit for patient service consultations, teaching, and research in the hospital. Many of the top ranking university hospitals of the nation have long maintained full-time medical staff personnel. This development serves to enhance the quality of hospital and outpatient care, and provides the affiliated part-time physicians with a source of valuable assistance. As Peters has pointed out,[25] more adequate public support of the beds utilized for care of the medically needy would enable hospitals to offer satisfactory salaries to qualified full-time physicians and thus greatly extend the scope of this movement. Affiliation of community hospitals with medical schools in regional programs would also stimulate this practice.

Even more effective would be the full-cost payment to hospitals for the care of the needy that would be made under a national medical care program. With cost reimbursements for all or nearly all patients, hospitals would be in a far better position to retain full-time staff, to support research and teaching, and to provide consultants and special services for affiliated outlying hospitals.

Specific provision should be made in the plan of payment to participating hospitals for the inclusion of salary funds for full-time staff members. This, together with the guarantee of hospital reimbursement for all or nearly all patients, would provide the financial basis for vastly improved hospital care.

Staff Organization

Continuous maintenance and elevation of standards within the hospital depend upon conscientious organization of the clinical staff and upon its educational and self-appraisal activities.[26] Recognized functions of good hospital staffs include regularly scheduled conferences, analysis of previous hospital experience, and review of problem cases and of unexplained deaths.[27] Chiefs of service can judge the general quality of their departments through such objective criteria as the number and type of consultations, frequency rates for certain categories of surgical and other therapeutic procedures, autopsy ratios, record keeping, incidence of preventable complications, utilization of laboratory services, and the nature and number of referrals to social service.

A useful device for the encouragement of high levels of staff performance is the so-called *medical or statistical audit* which has been used for many years by a few leading hospitals and is now coming into more general favor.[28] This is a periodic audit by the entire medical staff of the work performed in the hospital. The necessary requisite is comprehensive and uniform record-keeping on the part of the medical staff. On the basis of these records, statistical tabulations and analyses are compiled which show the morbidity and mortality experience of each service and each individual staff member during the period involved. Initial diagnoses and prognoses are compared with the results of hospital treatment. Such analyses, carefully made and interpreted, become the basis for self-education and improvement, for staff appointments and promotions, for evaluation of new procedures, and for the discovery of sources of poor work in the institution.

The quality of hospital care correlates directly also with the caliber and activity of the personnel conducting pathological and radiological services in the unit. Persons responsible for these technical specialties must be fearless and honest in their diagnostic work, if first-rate medicine is to be practised, and if unnecessary and unwarranted therapeutic procedures are to be minimized.

All such elements of quality in hospital service should be reflected in the standards and procedures set up under a national program for medical care.

GENERAL AND SPECIAL HOSPITAL RELATIONSHIPS

Technological advances in medical science and the unplanned development of community health facilities have resulted in an uncoördinated maze of chronic, mental, tuberculosis, communicable disease, maternity, and other special hospital facilities. Highest standards of medical care, however, call for the physical unification of special hospital facilities within the framework of the general hospital plant. If planned construction of this nature is not immediately feasible, the closest possible administrative and functional relationships should exist between the "parent" general hospital and subsidiary special institutions.[29] Within regional areas of service in a national program, special long-term facilities can be affiliated with general hospitals at appropriate levels.

Such coördination of general and special hospital facilities is essential if continuity of patient care is to be achieved in a medical care program. Proper medical supervision of nursing, convalescent, chronic, and other institutions by the active staffs of affiliated general hospitals is possible only in this way. The most economical use of all the physical and human resources of the various units of the hospital system is thus realized. Finally, financial and other deterrents to the easy transfer of patients from one institution to another can be overcome only when all facilities in an area are functionally coördinated and jointly participate in a single financial plan.

TRANSPORTATION SERVICES

A necessary component of a coördinated and comprehensive system of home, office, and hospital care is the provision of good ambulance service. The smooth functioning of the regional hospital plan also depends to a considerable degree upon the efficiency of the system for transporting patients, personnel, and diagnostic specimens.

The modern concept of ambulance service might well include provision of air transportation for patients living in remote areas, for those isolated by impassable road conditions, and for those requiring immediate care in a specialized facility. Such service should be arranged in relation to the regional hospital plan so that patients can be treated in the nearest facility competent to provide

the care required. The advantages of air transportation for rural and mountainous areas have never been fully investigated, apart from the extensive war experiences and the experiments in Australia, Saskatchewan, and a few other countries. The combination of outpost health centers containing the medical essentials, plus quickly available air transportation to fully equipped hospitals and medical centers, may serve to alter some current concepts regarding the best means for providing medical care to outlying areas.

It would seem essential to the goal of high quality that such services be included as rapidly as feasible in a national plan, following full experimentation in selected areas.

RELATIONSHIPS OF HOSPITALS AND HEALTH DEPARTMENTS

A recent statement of the American Hospital Association and the American Public Health Association has emphasized the advantages of joint housing and coöperative functioning of hospitals and health departments.[30] By such joint activity, the services of each can be strengthened, continuity of care can be facilitated, and the necessary rapprochement between preventive and curative medicine can be encouraged. With the increasing assumption of administrative responsibility by health departments for state and local operation of medical services—as urged in the 1944 A.P.H.A. Statement [1]—official health authorities are becoming more closely associated with hospital problems. A real impetus toward coördinated activities and joint housing can be foreseen in this connection.

The logical development of all aspects of hospital and related care leads to a broad concept of the community health and medical center, from which can emanate the fully coördinated and balanced health services needed by a local population. This involves not only the joint housing of hospitals and health departments, but acceleration of the discernible movement toward establishment of offices for private physicians and medical groups within the hospital proper. Thus, the role of the community hospital is strengthened as the total medical services of the area are organized around it.[31]

The community health and medical center can help realize many of the goals previously discussed: coördination of home, clinic, and hospital care; organized professional staffs with hospital offices; unification of inpatient and outpatient services; provision of diagnostic services for private practitioners; coöperative emphasis on preventive medicine and health education; and, finally, regional affiliations with outlying health stations and with metropolitan medical teaching centers. Through development of such community health centers, within the framework of an organized medical service program, the highest standards of patient care can be achieved.

SERVICES

A major criterion of medical adequacy is that the services rendered be comprehensive, balanced, and afford the patient a maximum continuity of care. In the previous discussion of personnel and facilities much has also been said of the content and organization of services. This section will further consider some of the special aspects of medical service which have a particular bearing on standards.

PREVENTIVE CARE

A most significant criterion of medical care of high quality is the degree of emphasis placed upon prevention of disease. The unfortunate separation of preventive and curative medicine—historically developed in the independent activities of public health officers and private practitioners—is incompatible

with the highest standards of modern medicine. "Prevention" no longer deals only with preventing the initial onset or occurrence of disease. It also means preventing the continuance or progress of disease which has already occurred; it means preventing the development or persistence of disability or invalidism, and of dependency, destitution, and other undesirable social effects. In other words, effective preventive service requires prompt, comprehensive, and continued personal care as well as community service of the kind traditionally associated with public health activity.

Public Health Services

A national health program should include provisions for the development of full public health coverage in every area and for the integration of medical services with the activities of public health agencies. Community organization of disease control measures applicable to large groups of people can reduce considerably the incidence of illness. Public health measures, if properly supported, can eliminate many of the preventable diseases now adding to the costs of medical care and public assistance. Provision of optimum community health protection allows the greatest possible application of medical care funds for diagnostic and therapeutic services in conditions not controllable by present-day mass methods.[32]

Preventive Medical Care for the Individual

Effective preventive service requires not only close coördination of the medical care program with that of public health agencies, but also strong program emphasis on individual health promotion and preventive care by practitioners. The effectiveness of the preventive work accomplished reflects in large degree the extent to which financial barriers between the patient and the practitioner have been removed. Good preventive care requires the elimination of special charges for initial or any other visits to the physician or clinic. It implies the geographic availability of services, as provided through coördinated regional networks and special incentives for rural practice. It makes essential the placing of administrative emphasis upon effective home and office care, diagnostic services for ambulatory patients, and simplification of administrative procedures in the provision and receipt of personal care.

The medical services of the program should also facilitate appropriate periodic health inventories of selected classes of individuals.[33] Provision should be made —in conjunction with public health agencies—for mass screening programs utilizing such newer techniques as the 70 millimeter chest x-ray and the microchemical diabetes test. Such health inventories are made feasible only by the removal of the financial barriers confronting the supposedly healthy individual and by the assurance of medical care for disorders which come to light. An essential component of these appraisals should be health guidance for the entire family.

SOCIAL AND ECONOMIC ASPECTS OF MEDICAL CARE

Medical service of the highest technical quality is frequently ineffective if rendered without regard to the social, psychological, and economic factors affecting the patient's condition. Good clinical care involves treatment of the patient as a "whole person," as an individual functioning in a definite social environment, rather than as an impersonalized example of an organic pathological disorder.[34] In the modern technical maze of diagnostic equipment, laboratory tests, special consultations, complex hospital routines, and the like, the tendency to lose sight of the individual patient is great. Comprehensive study of the patient is therefore neces-

sary, involving all aspects—whether related to home, occupation, income, diet, or other factors—which are relevant to the patient's illness and his restoration to health. Diagnosis and therapy should be planned in careful relation to the realities of the patient's socio-economic situation. Clinical services should be closely correlated with other programs of social welfare, including vocational rehabilitation, housing, recreation, and other services. Professional standards in a national health program should continually be concerned with the social factors influencing the patient's recovery and with the effective utilization of all resources, within medical agencies and in the community, for meeting his needs.

The recent tendency to deal with the family as the unit of health care is an effective approach to the consideration of social and environmental aspects in medicine.[35] It represents one effort to recapture the valuable relationship that existed between the old-type family practitioner and his patients. Medical service teams operating in community health centers can deal effectively with the health problems of whole family groups and can promote hygienic habits through family health guidance activities. Significant developments of family health centers are under way in many countries, particularly England, South Africa, Canada, Sweden, and the Soviet Union.[36]

A national medical care program can promote the principle of family care in community health centers in at least three ways. Under the plan, the entire family group would be eligible for similar services. Guaranteed payments to practitioners and hospitals make possible the maintenance of health centers in any community—particularly if high priority is given for capital construction grants to these facilities. Finally, the regional pattern of organization can assure needed specialty services for small health units through their functional ties to nearby better equipped hospitals.

PSYCHIATRIC SERVICES

It is becoming increasingly recognized that the isolation of psychiatric from general medical services is mutually detrimental and hinders the development of services of high quality. The current interest in psychosomatic medicine indicates that the health professions are receptive to the possibility of bridging this gap. A national health program, properly oriented toward mental health, can provide the necessary leadership and material basis for achieving this purpose. It can stimulate the development of mental hygiene clinics and psychiatric units as regular rather than exceptional services of the general hospital. Through encouraging the inclusion of psychiatry in medical groups, clinics, hospitals, and regional plans, a national health program can promote the integration of skilled psychiatric personnel into all general health and medical services. It can help to educate physicians and other health workers to understand the importance of psychological factors in the management of their patients. Most important of all, it can bring about an extensive development of preventive psychiatry, utilizing services such as well baby clinics, school health programs, and all other community resources for the widest possible dissemination and application of sound principles of mental hygiene.

CONTINUITY OF MEDICAL CARE

High standards for medical service require more than adequate personnel and facilities. The patient must be guaranteed the advantages of continuous and interrelated care. Such care involves attendance by the same physician, dentist, nursing team, social worker, and so forth, throughout the course of the patient's management—as far as is practicable and desirable. It will be modified, of course, by the need for

consultants, referrals to differently qualified personnel, and freedom of choice and change on the part of physician or patient. Nevertheless, the principle of continuity of care should enable the patient to remain under coördinated management throughout all phases of treatment.

Continuous care must not only be well integrated but also complete in its various aspects. High quality of service is difficult to achieve unless domiciliary, ambulatory, and institutional care are all systematically developed. The full range of health service—from prevention through rehabilitation—must be integrated from the patient's point of view. Professional personnel must be free to render service wherever indicated by the clinical and social factors in the case. The highest standards are not achieved when the services of an organized program are limited to one particular type of care—for example, inpatient hospital services. Full continuity of care permits a medical plan to exploit the advantages of home care for children, the chronically ill, mild cases, and others who might benefit in selected instances.[37] It makes possible saving of hospital beds, reduction in length of hospital stay, easy transfer of hospital patients to convalescent facilities, and other service and administrative advantages. For rural and suburban areas this concept of continuity and completeness of care can best be realized through the regional network of medical facilities and functions described above.

CARE FOR CHRONIC ILLNESS

The principle of continuity includes the concept of service for long-term illness and disability. Good medical care does not stop at the provision of services necessary to control the acute episodes of disease. Scientific care of the patient includes chronic hospital, convalescent, rehabilitative, and nursing-home services wherever necessary.[38] Adequate programs of home care are vital in the proper management of many chronically ill individuals.

A recent joint statement of the American Hospital Association, the American Medical Association, the American Public Health Association, and the American Public Welfare Association, has outlined recommendations for optimal service for the chronically ill.[29] The statement recognizes that the care of long-term illness presents certain special aspects, but emphasizes that it cannot be isolated from general medical services without incurring serious danger of deterioration in the quality of care.

REHABILITATION

The vast experience of those responsible for rehabilitation of the wounded during the recent World War has renewed professional interest in this long neglected phase of medical care.[39] It is now widely recognized that treatment is not completed when the clinical disorder is eliminated or stabilized. Wherever possible the patient must be restored to a useful and self-sufficient place in society. This involves the coördination of medical, psychiatric, physiotherapeutic, educational, vocational, and social services. As in the case of services for the chronically ill, rehabilitation programs should provide for maximum continuity with earlier phases of care, and should be developed in close association and coördination with general medical services and facilities.

DISCRIMINATORY PRACTICES IN HEALTH SERVICES

The persistence of discriminatory practices in profesional fields continues to depress the quality of medical care.[40] Minority population groups are too frequently denied needed medical services because their members are refused equal opportunity for professional education and advanced training. Physicians and other professionals from these minority

groups are turned away from the very resources that would maintain the quality of their work: hospital appointments, medical society membership, referral arrangements, teaching affiliations, research opportunities, and the like. Patients, on the other hand, often find themselves barred from certain practitioners' offices, from entire hospitals, and from needed private accommodations—or else they are afforded cursory or substandard treatment that fails to satisfy their needs. Segregated facilities generally are below the standard maintained by other institutions in the community. The entire picture of discrimination in health service is inconsistent with the high precepts of medicine and serves to perpetuate some of the most glaring examples of low quality of medical care in the nation. A national health program should eliminate all barriers to needed service—social as well as economic and geographic.

ROLE OF THE PUBLIC

In developing a medical care program of good quality, the public has a vital role to play—both as responsible members of the community and as patients on the receiving end of the services. A high caliber medical service can be effective only if properly utilized. The recipients must be taught, through carefully designed programs of health education, when to seek medical care, how to use the various resources of the program, and how best to follow the recommendations and directions received from professional attendants. Appropriate educational activities in the program will stimulate public desire for high quality of service and will indicate the disadvantages of unnecessary demands for care. An intelligent, coöperative and sensitized population is quick to detect flaws in standards of service and can make real contributions to the program by timely and judicious comments on quality of care received.

As supporters of, and participants in, a national medical care program, the public has many opportunities for enhancement of service standards. Full lay representation on policy and planning boards and on advisory committees helps to insure equitable consideration of the patient's point of view. Active understanding of operations and procedures affords recipients a greater sense of personal identification with the plan, and is conducive to better public response. In this connection, trained health educators have a vital role to play in facilitating effective operation of the program.

FINANCING

An essential factor in medical care of good quality is that of sound and adequate financing—so designed that no economic barriers restrict the provision of needed medical services, and that fair and adequate remuneration is provided to all those furnishing the care. Good medical care, although purchaseable, is not cheap. As Sir Arthur Newsholme has stated, it should be considered worthy of generous support.[41] The financial savings to society produced by preventive care, early diagnosis, prompt treatment, and effective rehabilitation are actually far in excess of the original cost of such service—in terms of increased productivity and reduced public outlays for care of persons with chronic illness, disability, insanity, dependency, and destitution resulting from disease.

A fundamental principle of quality in medical care, then, is adequate financial support for service and administration. Meager financing can effectively limit the scope of service offered or demanded; can restrict the number and competence of participating personnel and facilities; and can postpone indefinitely the proper organization of available resources. As a first step in the achievement of high medical standards, the economic barriers between the best

of medical resources and their application to the requirements of optimum public health must be removed.

ECONOMIC BARRIERS TO MEDICAL SERVICE

The removal of financial deterrents in the provision of medical care has immediate and lasting effects upon the quality of that care. These include:

1. Encouragement of preventive services, since recourse to medical attention during health and early illness is no longer financially penalized.
2. More adequate use of laboratory, consultant, and institutional services, thus promoting full use of all modern scientific weapons in the war against disease.
3. Improvement of doctor-patient relationships, by the elimination of extraneous financial considerations from the consultation room.
4. Assurance of adequate income to professional personnel and of economic protection against the cost of illness to patients, thereby promoting better provision and reception of medical service.
5. Continuous support of medical education and research within the financial arrangements of the program.

FINANCIAL STABILITY

The 1944 A.P.H.A. Statement[1] recommends that "A national plan should aim to provide comprehensive services for all the people in all areas of the country . . . Services should be adequately and securely financed through social insurance supplemented by general taxation, or by general taxation alone. Financing through social insurance alone would result in the exclusion of certain economic groups and might possibly exclude certain occupational segments of the population." If such a program, providing service for the entire population, cannot be accomplished at the outset, the plan should at least aim toward the goal of universal coverage, and this goal should be achieved as rapidly as possible.

Adequate and stable financing is the necessary foundation for a medical care plan of sound structure. If social insurance is utilized, the maximum financial stability and adequacy is obtained by substantial supplementation with general tax funds and by coverage which assures the broadest possible spread of risk and the widest possible sharing of costs. Differential selection of the best risks by private insurance agencies (so-called "contracting out") should not be permitted because it would leave the national plan in an adverse financial position, greatly complicate administration and public participation, and expose the program to commercial exploitation.

Financial stability need not depend upon procedures such as "barrier" or extra payments, curtailment in duration of service and the like, which restrict unduly the scope of medically necessary service. A nation-wide program, with resources organized for maximum efficiency of service and with payment methods which permit economy of operation, can achieve a highly stable financial basis. However, some limitations on drug, dental, hospital or related services will be necessary at least initially, until the medical and administrative resources of the nation are more adequately developed and more efficiently organized.

Whether the medical care program is financed through social insurance supplemented by general taxation, or by general taxation alone, it is recognized that additional support from general tax funds is necessary for construction of needed facilities, for professional education, for research and other grants-in-aid, and for similar functions. Such provisions of a national health program are essential to the achievement of a high quality of care.

ADMINISTRATIVE PRINCIPLES

The final criterion of medical care of high quality relates to the efficiency of administration in organized programs. The foregoing sections have outlined those elements of medical service which

constitute "good" health care. Such a structure neither develops spontaneously nor functions independently of expert supervision and direction. The efficiency of administration of medical care plans determines to a considerable degree the actual quality of the service received by the patients.

The purposes of effective medical care administration are: (1) to assure early, prompt and thorough service; (2) to maintain high standards; and (3) to guarantee continuity and consistency of care.[42] An administrative system that consciously strives to achieve these goals can take advantage of the now considerable experience that has been accumulated in this and other countries. A few of the administrative principles most directly related to quality of service might be briefly discussed. Many have already been implied.

POLICY AND PLANNING

Standards of service satisfactory to both the public and the professions can be achieved only when equitable representation of both groups is provided on all policy-making and advisory bodies. As a basic principle, the representatives of no one professional or economic group should have majority control of policy determination. Equitable voice should be given to consumers as well as providers of service, to farm and labor representatives as well as civic and industrial leaders, to dentists, nurses, social workers, and related personnel as well as physicians and hospital administrators. Whenever professional or technical matters are involved, decisions should be made by appropriate professional and technical bodies. The basic control of the program, however, must never be relinquished by the people themselves, acting through elected legislative representatives and the appointed administrative staff.

Those in charge of administration should be experts in this field, specially trained, adequately compensated, and chosen on the basis of a merit system. Competence in purely clinical or academic functions does not necessarily qualify a professional person for administrative responsibility. Quality of medical service and efficiency of operation can also be improved by the regular utilization of expert consultants in the various technical phases of the program.

Maintenance of high standards requires constant self-evaluation in the light of the rapidly advancing frontiers of medical and organizational knowledge. A national health program must engage in continuous appraisal of its own operations, and must promote all opportunities for controlled experimentation in both the science and the method of medical care. There exists currently a serious need for objective criteria by which the quality of service in an operating medical care program can be appraised.[43]

ADMINISTRATIVE SAFEGUARDS OF QUALITY

All administration should be in the hands of a single responsible agency at each level of government. At the outset a clear definition of function is essential for each of the administrative units, for all staff personnel, and for participating professional persons and institutions. The program should be decentralized for flexibility and feasibility of local application in providing and paying for services.

Eligibility requirements in a program of universal coverage would be limited to the single factor of medical need. If coverage is less than universal, the extent to which the program approaches the goal of complete national coverage will largely determine the degree to which restrictions on age, sex, residence or settlement, income, occupation and the like can be minimized.

In order to promote medical services of high quality, the use of the means

test as a criterion of eligibility should be eliminated in a national health program.[44] The personal indignity of financial investigations prevents many individuals in serious need of medical service from seeking care under means test programs. A basic requisite for good medical service is a healthy relationship between providers and consumers; recipients of charity medicine are not in a position to insist on a high quality of care.

Good medical care is not promoted when services are rendered on the basis of a double standard—one for "paying patients" and one for "charity cases." Recipients of public assistance should be included in the national medical care program, and the welfare status of such persons should be unknown to those providing the care.

The publication and periodic revision of *administrative procedure manuals* would help all participating personnel to understand and attain the desired standards of performance. These manuals should contain the administrative policies and procedures of the program and such professional routines as are promulgated by professional authorities and advisers connected with the plan.[45] If efficiency rather than inflexibility of service is to be attained, such manuals should be liberally interpreted and frequently reviewed.

Free choice and change of practitioner, medical group, or facility should be maintained, subject to geographical limitations and provisions for proper selection of specialists. Professional personnel should retain the right to accept or reject patients, with the provision that the professional participants in an area are collectively responsible for rendering needed services to all persons who do not elect or who are not accepted by a specific physician.

Various administrative devices are valuable in controlling abuses and promoting quality of care. The right of *administrative review* should be retained by central and local administrative jurisdictions; by this means, systematic checks on service records and billings can be maintained. This is especially necessary under the fee-for-service method of payment.[46] Professional review of case records selected at random has produced dividends in terms of high quality as, for example, in the various programs of care for crippled children.* The proper discharge of administrative responsibilities includes the right of the operating agency to ascertain the caliber of the services for which it is paying.

Automatic *statistical audits* of services and costs provide an accurate and impersonal check on the standards of service. Comprehensive systems for the tabulation and analysis of all operational data make possible the detection of those consumers and providers of service who deviate significantly from the average experience of the area in any given time period.[47] (Such deviations do not, of course, necessarily represent "abuses" detrimental to the program.) The various details of program operation can be studied and adjusted according to analyses of accumulated experience. Relative efficiency of different service districts can be compared. Experience with different methods of care, with different categories of illness, with different groups of beneficiaries can be appraised and applied to the development of better methods and procedures. Most abuses of the plan—either excessive demands for service on the part of patients or improper activities on the part of professional persons—can be identified and evaluated through the systematic application of statistical methods in administration. This technic does not penalize or inconvenience the great majority of participants because

* See procedures of the Crippled Children's Program, U. S. Children's Bureau, Federal Security Agency, Washington, D. C.

of abuses by a few individuals, as do such methods as review of service bills and proration of payments.

The requirement of prior *administrative authorization* for selected services of an unusually expensive or doubtfully efficacious nature is another useful control method. In this way the local area medical administrator, with the help of advisory bodies when warranted, may exercise some control over the economy and efficiency of the new system. Such required authorizations should be reduced to a necessary minimum and should never be allowed to interfere with the timely provision of needed medical care. High quality of care is promoted by the early and easy access of patients to medical attention—a consideration which outweighs in overall importance the relative infrequency of unnecessary demands for service. For this reason extra "barrier" charges for first visits, home visits, health examinations, and so forth, are seldom justified in the name of administrative control.

The *method of paying* participating professional and other personnel should be one which will encourage preventive medicine and a high quality of service. The fee-for-service method puts emphasis upon sickness rather than health and upon quantity rather than quality. It hinders appropriate referral of patients because it provides an economic incentive for the physician to retain his patient. This factor, in addition, seriously limits the effectiveness of regional hospital plans by impeding the referral of patients to district and regional centers for necessary consultant services. In an organized plan, fee-for-service is cumbersome, requiring itemized billing and auditing and thus a great deal of paper work. It is also the most difficult method under which to control use of service either quantitatively or qualitatively and is, therefore, the most expensive method to administer in a medical care program. Widespread use of unlimited fee-for-service might well make physicians' services so costly as to force economies in other essential health services such as hospital, nursing, or dental care. If, on the other hand, a ceiling is set on the pool of funds from which fee-for-service payments are drawn, excessive multiplication of services by a few physicians may serve to force *pro rata* reductions in all fees paid, thus penalizing the more conscientious doctors. Such a result has been seen in this country in the experiences of voluntary prepayment plans with attempts to provide payment for comprehensive physicians' services by fee-for-service. In Great Britain, under their former National Health Insurance program, physicians in some localities at first elected to be paid by fee-for-service, with the pool of funds limited to the same amount as was available under capitation. Some doctors provided excessive numbers of services; all fees were forced downward *pro rata*, thus placing conscientious doctors at a serious disadvantage. In the end, by vote of the physicians themselves, fee-for-service was abandoned. In other countries where fee-for-service has been retained, it has been found necessary to modify this method of payment through combination with capitation or basic payments in addition to proration.

Other methods of payment such as capitation, part-time or full-time salaries, either separately or in combination, provide steady incomes for physicians as compensation for their time and skill. Unlike the "piecework" fee-for-service system, these methods pay amounts which are not directly related to the number of services furnished to sick people. As a result, physicians paid in this manner have an added incentive to keep their patients as healthy as possible, and so to reduce total demands upon their time, especially for the care of sickness. These methods, therefore, encourage preventive

medicine and minimize incentives for unnecessary multiplication of services. In general, they place emphasis upon quality rather than quantity, and upon maintenance of health rather than cure of sickness, as the foundations of the doctor-patient relationship.

At the same time, capitation or salary, if not properly applied, can have certain disadvantages. Physicians may offer too few rather than too many services, or even be led to do indifferent or careless work. They may be tempted, under capitation, to accept larger lists of patients than they can care for adequately. These problems can, however, be solved with less difficulty than those arising from the fee-for-service system. In order to safeguard quality, reasonable limitations should be placed on the number of persons for whom physicians undertake to provide service. The fact that patients would have freedom of choice (and of change) among participating individual physicians and medical groups would furnish a desirable competitive element, far more conducive to high quality of care than is mere competition for large numbers of fees. In addition, good work can be encouraged through supervision of standards of care by appropriate professional committees, locally selected with the advice of participating professional personnel. By removing or minimizing the incentive for quantity inherent in fee-for-service, the program could make careful, deliberate work, rather than the multiplication of services, the principal motivation for a physician to improve his professional and economic status.

The most satisfactory application of capitation or salary is found in group medical practice. In a group, the compensation of each physician depends not only upon his own efforts, but also upon the success of the group as a whole and the judgment of his fellows regarding his contribution to the group's success. The reputation of the entire group is at stake in the satisfaction of patients with the services of all physicians in the group. Under these circumstances, every physician naturally desires to do well in the eyes of both his patients and his fellow-physicians. These motives, which arise from the coöperative (rather than competitive) atmosphere in group medical practice serve largely to offset any disadvantageous effects of payment for physicians' services through salary or capitation.

Whatever methods of compensation are used, highest medical standards require that full payment be made to medical groups, full-time hospital staffs, and other professional teams, in addition to individual practitioners.

Methods of payment to hospitals and other institutions are equally relevant to good quality. All experience indicates that the problems involved in paying for hospital service are complex and difficult. Payment on a per diem rate which is uniform for all hospitals in a given area leads to mediocrity by penalizing the hospital which, in an endeavor to improve services, raises its costs above the average. On the other hand, payment to hospitals on a cost basis, while it gives ample scope for hospitals to improve services, provides no incentive to increase efficiency and keep costs at reasonable levels. The so-called "point-value" system of Agnew[48] attempts to reward quality and thoroughness of service, but has proved unwieldy in the recent experience of the Saskatchewan Hospital Services Plan.[49] Perhaps the best approach would be to pay hospitals on a cost basis, with different ceilings for hospitals providing services of differing scope and standard. No system for paying hospitals is workable in the absence of good cost accounting on a uniform basis.[50] This entire subject requires further study and exploration.

Rates of payment — when flexible, adequate, and appropriately related to

skill, experience, and responsibility—are important elements in the attainment of high standards. Payments should be sufficient but not excessive, in order to improve professional standards and minimize financial competition among health personnel. Rates of payment need not be uniform nationally, but may take into consideration regional variations in standards, as well as varying degrees of qualification on the part of participating personnel. When rates of payment depend upon qualification as a specialist, technician, or the like, the standards for such designation should be objectively established in advance by competent experts in the particular field.

Collection of fees over and above payment received from the organized program for a particular service should not be permitted, if services of equal quality are to be rendered to all individuals and if economic incentives are to be divorced from professional judgments. This, of course, does not exclude payments for services rendered to private patients outside of the plan.

STANDARDS FOR PERSONNEL AND FACILITIES

Objectively determined *qualifications* should govern the participation of general practitioners, specialists, and other personnel. Physician participation should be restricted to those with degrees of doctor of medicine and licenses to practise medicine. Similarly, appropriate educational and licensure requirements are necessary for dentists, nurses, and auxiliary personnel. Standards for medical specialists should be established and administered on the basis of specialty board certification and evaluation by a medical council of the individual's previous performance, standing in the medical community, and demonstrated ability. In so far as practicable, nonmedical practitioners such as optometrists or podiatrists should not be entitled to payment for services except under medical supervision or upon medical referral.

Supervision of professional services by professional persons is essential if the best of care is to be provided. Satisfactory professional supervision has long been an established criterion for approval of hospitals, clinics, and other medical organizations. Visiting teams of specialists in outlying areas, senior staff supervision of hospital work, mutual supervision in group medical practice, professional control of technical and auxiliary services, periodic review of clinical case records by qualified authorities—all such supervisory activities are necessary components of a program of good medical quality.

Proper medical standards imply that each practitioner will have sufficient time to render adequate service to his patients. *Administrative limitations* on the total number of patients for whom a participating physician may obligate himself to furnish care are, therefore, in the interest of good medical service, and should be developed with professional advice and recommendation.

The plan should provide *special incentives* for the settlement of health personnel in rural, depressed, and otherwise undersupplied areas. Such incentives might include specially provided equipment and facilities, loans or grants for initial expenses during the setting up of a new practice, assurance of adequate annual income, functional affiliation with urban resources, and the like. Such special provisions are necessary if the quality of service in outlying areas is to approach the standards of metropolitan medical centers.[51]

Standards for the participation of each type of hospital should also be established by the administrative agency and evaluated periodically with the advice and counsel of appropriate technical groups. A major requirement for hospital participation should be the efficient

organization and operation of the professional staff. Coördination between inpatient and outpatient departments,[52] and between both of these and home care services, is another essential element to be considered in evaluating hospital services. Approval for participation in the national health program should be reserved for facilities meeting at least minimal standards, with hospitals accepted for complete or limited services on the basis of objective qualifications. Financial and technical assistance should be made available to non-approved institutions interested in meeting the standards of the program.

SUMMARY AND CONCLUSIONS

The quality of medical care neither deteriorates nor improves automatically with the mere establishment of a national program of medical care. The standards of service achieved by this—or any—program depend directly upon the human and material resources available, upon their organization for service, and upon the efficiency of their utilization. A poorly designed and badly operated program can—and would—render the provision of good health service impossible. On the other hand, the very nature of a nation-wide plan provides a hitherto unparalleled opportunity for the development of services which can satisfy the highest criteria of good medical care.

Medical care of good quality requires well trained personnel, adequate facilities, and a reasonably comprehensive scope of service.

Highest standards of medical care are achieved only with the wise and efficient organization of these resources. This key factor determines the actual effectiveness of the personnel, the facilities and the services.

Efficient organization of personnel involves group medical practice in health centers; of facilities—regionalized planning for coördinated hospital networks; and of services—continuity through the full range of health care. These emerge, therefore, as the organizational triad most essential to improvement of the quality of medical care.

When sound financing and competent administration provide the firm foundation for such an organizational structure, high standards of service are protected. When provision is made for generous support of education and research in the health services, the constant elevation of these standards is assured.

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POSSIBLE HAZARDS FROM THE USE OF DDT

A MINOR panic with respect to possible dangers from the improper use of DDT as a pesticide was created this spring as a result of an article by Dr. M. S. Biskind [1] and by a series of highly sensational broadsides in a New York daily.[2] The latter articles include a statement that "DDT the great bug-killer may turn out to be one of the most devastating biological weapons ever loosed by a people upon themselves." "DDT," it is said, "is slowly poisoning large numbers of Americans, especially children." Dr. Biskind is cited as having observed "hundreds of cases at first hand." Actually, Dr. Biskind says he has found 46 known cases of DDT poisoning *in the literature*; although he assumes that infection classed as due to "virus X" may be really DDT poisoning, and that more than 200 cases of this syndrome have occurred among people in whose homes DDT sprays had been used. Certain individual members of governmental bureaus gave out somewhat equivocal interviews which contributed to further alarm.

That DDT in certain concentrations must be toxic to man is, of course, obvious; and for over five years, P. A. Neal and his colleagues in the National Institutes of Health have been carrying out experiments, both with animals and human subjects, to determine tolerance limits of safety. Furthermore, the U. S. Public Health Service, the U. S. Department of Agriculture, and the Medical Departments of the Army and Navy have had the amplest opportunity to observe actual effects upon the large number of men who have been employed in the application of DDT on a vast scale and who have been exposed to hazards far beyond those which could conceivably affect the ordinary user.

Therefore, it was possible, very soon after the storm broke (April 1, 1949), for a joint group of experts representing the various agencies concerned to issue an authoritative statement on the matter,[3] after a conference at which the Agricultural Research Administration and Production and Marketing Adminis-

tration of the United States Department of Agriculture, the Office of the Surgeon General of the Army, the Food and Drug Administrator, and the U. S. Public Health Service of the Federal Security Agency, the Bureau of Medicine and Surgery of the Navy, and the Pan American Sanitary Bureau were represented.

This statement pointed out that the toxicity of DDT for man "has been given full consideration in making recommendations for its use. There is no evidence that the use of DDT in accordance with the recommendations of the various federal agencies has ever caused human sickness due to DDT itself. This is despite the fact that thousands of tons have been used annually for the past four or five years in the home and for crop and animal protection. However, minor toxic symptoms may be produced by kerosene and various solvents used in DDT and practically all other insecticidal mixtures.

"Statements that DDT is responsible for causing the so-called 'virus X disease' of man and 'X disease' of cattle are totally without foundation. Both of these diseases were recognized before the utilization of DDT as an insecticide." It may be added that the distribution of these diseases shows a striking lack of concordance with the use of DDT in various sections of the country, that the symptoms of disease alleged to be caused by DDT are generally of the vaguest character (intestinal disturbance, headache, sore throat, fatigue); and that in the few cases where serious results followed from gross carelessness (drinking a whole bottle of insecticide), there was frequently enough solvent ingested (kerosene, in the case cited) to cause fatal results by itself.

There is a further possible problem involved, however, in the fact (demonstrated by the U. S. Department of Agriculture in 1945) that DDT tends to accumulate in the fatty tissues of exposed animals and to be excreted in the fat of milk. DDT can sometimes be detected in small amounts in cow's milk following the use of this insecticide in dairy barns. In view of this potential hazard, the U. S. Department of Agriculture had recommended on March 24 that DDT should not be used in dairies.[4] In April it urged[5] that "this insecticide not be applied to animals producing milk for human consumption. In the light of current information the Bureau also advises that safer materials be used for insect control in places where the milk might be contaminated, such as dairy barns, milk rooms, rooms containing dairy feed, or in similar situations on the farm. Nor should DDT be used for fly control in milk-processing plants. Further investigations are under way to determine whether DDT carefully applied in dairy barns and other situations mentioned can be used without causing significant contamination of the milk." It would seem desirable to obtain more extensive data as to the actual presence of DDT in milk by methods now available[6]; but, all in all, the situation seems to be well in hand and the public adequately protected.

The writer of this editorial is reminded of the controversy which took place some years ago with regard to the use of tetra-ethyl lead in gasoline. There was a real menace here and so many serious cases of poisoning occurred in the plants where tetra-ethyl lead was prepared that the product was voluntarily withdrawn from the market, pending studies by a board appointed by the U. S. Public Health Service. These studies indicated proper safeguards (such as the warning signs still posted at every filling station); and the application of these safeguards has made the use of this poison possible without any threat whatever to the public health. In the case of DDT most of the necessary data are already in hand. The use of this substance in dairy processes may properly be limited for the present;

but there is no scientific evidence to indicate the need for other restrictions (except those already in force).

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ADVANCES IN ANTIBIOTICS RESEARCH

THE second national symposium concerning recent investigations in the field of antibiotics was held under the auspices of the Antibiotics Study Section of the National Institutes of Health in Washington, D. C., on April 11 and 12. Because of the importance of antibiotics in the public health program, the results of this conference are of importance to all of us.

Eight papers were presented on streptomycin, dealing with chemical methods of assay, the development of resistance, and the effect of the anionic portion of the molecule of streptomycin and dihydrostreptomycin on the development of resistance. Another series of reports was presented on synergism, resistance, and the therapeutic use of antibiotics. In this group of communications, some of the pharmacological properties and comparative activities of the newer antibiotics, actidione, polymyxin, aureomycin, chloromycetin, and bacitracin were discussed.

The intensive search for antibiotic substance was demonstrated in the evening session of April 11, when 12 papers were presented describing new compounds of this type. The new antibiotic, borrelidin from a streptomyces species, was described. Antibiotic substances from the sweet potato, the banana, the Indian carrot, hops, and seed plants were reported. Two antifungal agents, one from subtilin broth, the other called "xg" isolated from a streptomyces species, as well as the most recent discovery of Waksman, "Neomycin," were described in detail. A variety of studies were presented on the polypeptide antibiotics, particularly bacitracin, polymyxin, circulin and subtilin, none of which, incidentally, have yet been modified sufficiently to obviate the inherent toxicity of these drugs. It appeared to be the consensus of opinion that the polypeptide antibiotics are inherently nephrotoxic, and that their usefulness for parenteral administration can probably be answered only by a modification of the molecule.

The highlight of the symposium was a series of 17 papers describing the usefulness, pharmacology, physical and chemical characteristics of aureomycin and chloramphenicol. These two drugs, which are now available on the market, are the first antibiotics demonstrated to be effective against certain of the rickettsial and viral diseases. Chloramphenicol is the first major antibiotic to be synthesized on a commercial basis. The method of synthesis and the structure of this drug were described during the symposium. It was shown to be useful in the treatment of Rocky Mountain spotted fever, scrub typhus, typhoid fever, brucellosis, Gram-negative bladder infections, and primary atypical pneumonia. Aureomycin, on the other hand, appears to be a much more complicated compound, and although prepared commercially as a crystalline drug, it has not been synthesized. Both drugs are used orally rather than parenterally. Aureomycin was shown to be useful in the treatment of Rocky Mountain spotted fever, typhus, scrub typhus, primary atypical pneumonia, staphylococcic, streptococcic, and pneu-

mococcic pneumonia, brucellosis, and certain staphylococcic infections. During the discussions it became clear that an even broader field of usefulness for this drug is possible, since evidence appeared to be accumulating that aureomycin may be useful in the treatment of infectious mononucleosis, certain types of syphilis, lymphogranuloma venereum, and granuloma inguinale.

It is the function of the Antibiotics Study Section of the Division of Research, Grants, and Fellowships of the National Institutes of Health to promote, develop, and correlate research in the antibiotics field, and, during the past two years, considerable sums of money have been granted to individuals throughout the country to make it possible for them to continue studies on antibiotics. Investigations in this field have moved rapidly, and since it is difficult or impossible for the national societies to sponsor broad symposia exclusively for antibiotics, and since it is most important that the recent advances in antibiotics be brought to the attention of those vitally interested in this field as promptly as possible, it has been planned by the Antibiotics Study Section to sponsor symposia on antibiotics research at periodic intervals in the future.

TRYPANOSOMIASIS

THE continent of Africa now represents one of the major hopes of the world—so far as the development of new natural resources is concerned. There is much yet to be done, through planning and conservation, in Asia, in South America and even in the United States. Africa is the only continent which many observers believe has truly vast potentialities waiting to be tapped. How sound this view may be, only time can show. For Belgium, France, and the United Kingdom, the problem is certainly of pressing importance.

The chief obstacle to development in many areas of Africa is a public health problem—that of trypanosomiasis. Half a dozen different species of trypanosomiases are involved and they are transmitted by as many or more species of biting flies (most often of the genus *Glossina*). Parasites, natural reservoirs and insect vectors vary widely in different regions; and control methods must vary correspondingly. In general, the basic reservoir is to be found in the wild fauna, the big game of the African continent which normally harbor the trypanosomes without suffering from the disease. The *Glossina* carries infection to domestic animals and to man (if the particular trypanosome present can live in the human body). Serious epidemics among human beings have occurred, as in the great epidemic in the Lake Victoria region half a century ago. The devastating influence of trypanosome infection on cattle and pigs and hence on the general economic status of the population is also, however, a vital practical problem. "Vast areas of Africa are empty except for the tsetse fly and wild animals, which supply the insect with food. There is evidence that in many parts of Africa the fly is spreading, thus squeezing man into smaller and smaller areas, with consequent food shortage and soil erosion."

The importance of this problem caused the calling of an international congress on trypanosomiasis at Lagos during the war. At a conference held in French Equatorial Africa in February, 1948, an International Scientific Committee for trypanosomiasis was created which held its first formal meeting in London in February of the present year.

Practical methods of combating trypanosomiasis have been developed along two major lines of attack, directed, respectively, against the tsetse fly and against the trypanosome itself.

The insect vectors breed in areas covered with shading bush or thicket. Clearing the bush has been effective in *Glossina* control in certain areas, but on a wholesale scale would be impracticable over thousands of square miles. After the bush is cleared the ground must be occupied and cultivated quickly and continuously since scrub and trees in Africa reoccupy temporarily cleared territory with alarming speed. The destruction of the wild game, which is the primary reservoir of infection, has been successful in certain areas of Southern Rhodesia; but again, is impracticable in a vast continent. Finally, the use of insecticides, such as DDT and gammexane, applied by smoke bombs or by apparatus attached to the exhaust of an airplane has given promising results in an experimental area of South Africa. The same principle is now being extensively applied in certain parts of East Africa.

A second line of approach involves the control of the trypanosome by the use of specific drugs which destroy the parasite in the human or animal body. In treatment of cattle a wide variety of substances have been used for this purpose such as antimony compounds, quinolin compounds and phenanthridinium compounds. The last named (dimidium bromide) has been used with effectiveness in Zululand and the Southern Sudan. Antricyde is the most recent addition in this field. For the human being, new drugs are available (antrypol and tryparsamide, and—more recently—pentamidine) which have great promise. Pentamidine, as claimed by workers in the Belgian Congo, will protect man from sleeping sickness for eight or nine months after a single injection; and Antricyde is said to protect cattle against infection for four to six months.

If these claims should prove justified, the status of both men and domestic animals in Africa may be vastly improved. The *British Medical Journal*[1] has, however, pointed out the danger of premature optimism. Its editor points out that there are many variables involved in different areas which "include the species and strains of trypanosome, the species of tsetse common in the area, the presence of big game, the prevalence of other epidemic diseases, the psychological make up of the African." He says, in connection with the last point: "How closely trypanosomiasis is bound up with the culture patterns of each tribe is shown by a consideration of the village pond, anathema to the sanitarian because it provides all-the-year breeding conditions for mosquitoes and tsetse flies. For the villager, however, the pond provides green plants, which, when reduced to ash, are essential as a source of salt. In some areas the ponds contain fish; these are sacred, for either the lives of particular fish may be connected with the lives of particular villagers, or the fish may house the souls of the ancestors. In other areas the banks of the pond form the local latrine, and the fish eat up the fecal matter. Any interference with the village pond may thus have serious repercussions."

In spite of all difficulties it will be surprising if the new methods of attacking tsetse flies and trypanosomes now available do not bring substantial results. Whether—and how soon—the results of rescuing the people and the domestic animals of Africa from trypanosomiasis will increase the food available for other continents, is a more problematical question. The days of imperial exploitation of backward peoples are past. The *British Medical Journal* expresses the sense of grave responsibility which inspires present-day British policy toward its de-

pendencies in closing with the query, "How far are Western European nations, comparatively well fed by African standards, justified in removing from Africa first-class proteins in the shape of meat and eggs when African populations are still living on diets that are grossly deficient in proteins?"

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HOSPITAL DELIVERY AND INFANT MORTALITY

THE statistical relationship between infant mortality rates in 973 cities of the United States and certain socio-economic indices for those cities is the subject of a brief but highly suggestive study by Altenderfer and Crowther.[1] The four factors analyzed were the median size of the city, its per capita income, the percentage of white persons in its population, and the percentage of births taking place in hospitals. Zero order correlations were negative and considerable, in all but the first of these indices. When the factor of hospitalization was held constant, the first order correlation with race and income fell to a level which was without statistical significance. When—on the other hand—either the race factor or the income factor was held constant, the first-order correlation with hospitalization remained between .47 and .49. When both the factors mentioned were held constant, hospitalization still maintained a significant second-order correlation of .41. The authors conclude that, in the areas studied, "the association of low infant mortality with high per capita income and with high percentage white is a consequence of the association of high values of these factors with high percentages of births hospitalized. The high correlation between infant mortality and percentage of births hospitalized does not necessarily indicate a causal relationship. It is not hospitalization in the narrow sense of the word but the concomitant circumstances—such as an aseptic environment, the availability of skilled care and of facilities for dealing with emergencies, and the better prenatal care usually associated with hospitalization—that save many infant lives. The components of maternity care are difficult to evaluate individually but hospitalization at delivery is an index of the utilization of the best available care."

This study is sufficiently important to warrant careful evaluation and repetition with other data which may be available. On the face of it, the investigation suggests that our general policy of fostering the practice of hospital delivery is a sound one; and that the skepticism on this point which is occasionally expressed is not justified.

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Clearing House on Public Health Salary Information and Personnel Needs

SECOND ANNUAL STUDY OF LOCAL HEALTH DEPARTMENT SALARIES

A body of data about public health salaries is being rapidly built up. The second report on "Salaries of Local Public Health Workers" made by the U. S. Public Health Service in coöperation with the American Public Health Association and the Association of State and Territorial Health Officers, has just been released with an April date line. The previous one was published in May, 1948, and discussed in the October clearing house (*A.J.P.H.* 38, 10:1452 (Oct.), 1948). The first report was based upon 236 local health departments serving populations of from 50,000 to 250,000 in 38 states; the current one on 253 similar departments in 37 states. Two studies of state health department salaries have also been published and discussed in the clearing house (*A.J.P.H.* 38, 5:576 (May), 1948; and 39, 1:79 (Jan.), 1949).

Perhaps the most significant single fact in the latest study of local salaries is that, on the basis of the lower limits of the median salary ranges, there has been an average increase in salaries of 10 per cent during the last year.

Below are shown the number of workers in seven categories reported in the two studies, together with the number of states and number of health departments represented in each category.

At the time of the earlier study 6 health officers were reported receiving $9,600 or more annually; in the current study the number was 17. In the earlier study 7 were reported receiving less than $4,800; currently that number has dropped to 5. Eight sanitary engineers are reported in the current study to be receiving $6,000 or more annually as against none in the earlier report. However, 18 were receiving less than $3,000 as against 15 in the earlier study when a slightly larger total number of sanitary engineers was reported. The number of sanitarians receiving $4,800 or more increased from 3 to 6 during the year, and those receiving less than $2,400 dropped from more than one-fourth to less than one-sixth of the total.

The number of supervising nurses receiving $4,200 or more increased from 10 to 23 and only one received less than $2,400, although in the earlier year there had been 10. The number of staff nurses receiving $3,600 or more increased from 17 to 54 and those receiving less than $2,400 decreased from one-third to one-fourth of the total. Three professional laboratory workers were reported receiving $6,000 or more annually in the current study and the number of those receiving less than $2,400 decreased from 27 to 12 per cent of the total during the year.

In studying this brief summary or the

	Number Reporting					
	States		*Health Departments*		*Number of Workers*	
	1948	*1949*	*1948*	*1949*	*1948*	*1949*
Health officer	34	37	191	223	191	223
Sanitary engineer	25	23	92	71	114	105
Sanitarian	38	37	212	244	956	1,219
Professional laboratory worker	23	34	84	110	179	193
Supervising public health nurse	36	35	159	166	239	232
Staff public health nurse	37	37	224	250	1,648	1,963
Public health educator	16	19	36	56	39	63

more detailed report, it must be remembered that these are local health departments serving populations of from 50,000 to 250,000. Therefore it is hardly to be expected that the medians or ranges of salaries will apply to such metropolitan areas as New York City with its five counties, Philadelphia City and County, Los Angeles, San Francisco City and County, Detroit, and others.

The detailed report has already been distributed to all state and local health officers. Copies for further limited distribution are available from the Committee on Professional Education, American Public Health Association, 1790 Broadway, New York 19.

N.O.P.H.N. RECOMMENDED SALARIES FOR PUBLIC HEALTH NURSES

The Board of Directors of the National Organization for Public Health Nursing has endorsed recommended beginning salaries for 7 grades of typical public health nursing positions. These recommendations were prepared by a subcommittee on salaries of the organization's Committee on Nursing Administration and were published in the agency's magazine, *Public Health Nursing*, April, 1949. The recommendations point out that positions may vary in different agencies and that there may be variation from the recommended minimums in relation to cost of living, experience, and qualifications, etc.

The table shown gives the recommended minimum beginning annual salaries for the seven positions. Included in the recommendations but not reproduced here are two other items, namely, the qualifications for each grade of position and a job description.

Reprints of the article giving the detailed recommendations are available from the National Organization for Public Health Nursing, 1790 Broadway, New York 19.

Position	*Recommended Minimum Beginning Annual Salaries*
Registered Nurse	$2,700
Public Health Nurse, Grade I	3,000
Public Health Nurse, Grade II	3,600
Public Health Nurse Supervisor or Public Health Nursing Director in agency with fewer than 10 nurses	4,200
Public Health Nurse Consultant, not fully qualified	4,500
Public Health Nurse Consultant, fully qualified	5,500
Public Health Nursing Assistant Director or Public Health Nursing Director in agency with from 10 to 50 nurses	6,000
Public Health Nursing Director in agency with 50 or more nurses or State Director of Public Health Nursing	7,500

THE SALEM EXPERIMENT

It is Salem, Mass., though there is an apocryphal tale that Salem, Ore., once brashly asked its much older namesake to change its name to avoid mail mixups. At any rate, the New England Salem is the guinea pig in an experiment in developing public opinion for a long-range attack on the problem of informing citizens about public health.

Based on the fact that today's students are tomorrow's voters and legislators—and workers—the Salem project is an experiment in training high school students in the elementary concepts of community health. In a "Suggested Guide to Health Teaching in the Senior High School" being prepared, a unit entitled "Health Professions and Agencies at Work" was included. Since much of the material in it was untried as teaching material, the unit was taught to a group of seniors in the Salem High School as a part of the course in "Problems of Democracy." The first lesson made use of two current articles, "The Shame of Our Local Health Departments," from *Collier's Magazine*, which is a broad national look at the local health picture, and a *Boston Herald* article, "Nashoba Unit Pioneering Way to Good Health at 40 cents a Person," which is a story of the way one Massachusetts community is providing local health services.

This whole pilot experiment is written up in the April, 1949, *Health News* of the Massachusetts Department of Public Health, by a state district health educator and a director of social studies in the high school. It is pregnant with suggestions for recruitment as well. As high school youngsters know more about public health services and their importance, they will also tend to join the ranks of its workers. The summary of the pilot experiment says "When the teacher helps his students to discover, define, and explore their own needs and those of their community, high school boys and girls will enter into this experience with spontaneity, interest, and energy to produce understanding and lasting interest in this relatively new area of public health."

AN EXAMPLE OF CITIZEN INTEREST

If there is a profession in which there is a more critical shortage of personnel than public health, it is the teaching profession. And already, for several years, the National Education Association, the professional organization, and many other agencies have been pounding away at the low salaries and untoward personnel practices that have been steadily depriving the profession of some of its best practitioners.

Now a National Citizens' Commission for the Public Schools has been formed, under the chairmanship of Ray E. Larsen, who is President of Time, Inc., and of the United Hospital Fund of New York.

The commission has received initial financial support from the Carnegie Corporation and the General Education Board. The present membership is 28, later to be increased to 60. These 28 represent newspapers, magazines, business firms, labor, farm organizations, public relations as well as educational organizations.

A full-time educational consultant will be employed, assisted by an advisory board of educators. It will act as a clearing house of information on public school problems for local groups. The commission's program calls for citations of groups of laymen who have made exceptional progress in improving their local public schools, and outstanding achievements of good public schools may later be chosen for public citation.

Who will organize a National Citizens' Commission for the Public Health Departments?

THE OREGON ALARM RINGS

The President of the Oregon State Board of Health, Dr. Charles E. Hunt, by way of a letter to the Ways and Means Subcommittee of the Oregon Legislature, has called for action to avert a serious breakdown of public health control because of the Board's inability to recruit and retain personnel at the low salaries authorized by the state. Said Dr. Hunt, "The Board is not only unable to pay salaries com-

parable to those paid in private enterprise and in our neighboring states of Washington and California, but it actually cannot compete with counties of our own state in recruiting specialized personnel." There are five key vacancies in the State Health Department, one of almost five years' standing.

Take a Test

The Merit System Service booth at the American Public Health Association annual meeting in Boston attracted considerable attention with its "TAKE A TEST" exhibit. This consisted of six short sample tests, designed to illustrate the type of service being offered by the Merit System Service and to show how public health information, experience, and judgment can be measured by objective examinations.

The exhibit was repeated at the Western Branch meeting of the American Public Health Association in Los Angeles, Calif., May 30 to June 1.

The results for the Boston meeting are available in an attractively bound report which contains copies of the six sample tests, an answer key, an analysis of the scores of the persons tested, and an analysis of the items themselves. The latter illustrates the method which is used to evaluate the effectiveness of individual questions. The report may be obtained by writing to the Merit System Service, American Public Health Association, 1790 Broadway, New York 19, N. Y. $1.00.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Cooperation for Rural Health—*By Helen L. Johnston. Washington, D. C.: U. S. Dept. of Agriculture, Farm Credit Administration (Miscellaneous Report 123)*, September, 1948. 55 pages. Processed.

This is a booklet on group prepayment plans for medical care addressed primarily to farm people. It is illustrative of a significant body of literature coming from agricultural agencies in response to the demands of rural leaders.

The federal Farm Credit Administration is concerned, among other things, with assisting farmers' marketing and purchasing coöperative associations. For some years these associations have applied coöperative principles to the purchase of medical and related services, and Miss Johnston has made on-the-spot studies of numerous such programs. Her booklet describes the structure and function of these programs under a pragmatic (rather than logical) classification: hospital service plans, insurance company plans, and coöperative health associations. Sufficient detail on the operation of different plans is given to implement a brief section on Suggestions for Rural Health Improvement Programs.

The booklet closes with an appendix on specific steps to be taken in studying the needs and resources of a rural community to provide the basis for organizing programs to improve medical services. In the effort to achieve simplicity, there is some rushing into problems where angels fear to tread, especially in the discussion of health service planning beyond the sphere of prepayment programs. As an easy-to-read manual on group medical care insurance plans, however, the booklet should be useful to rural leaders and possibly to public health workers from whom farm organizations seek advice.

MILTON I. ROEMER

Nursing of the Sick—1893—*By Isabel Hampton and others. Published under the sponsorship of the National League of Nursing Education. New York: McGraw-Hill*, 1949. 218 pp. Price, $3.50.

Whether you like history or not, the reader will not be able to browse through this collection of papers and discussions of nursing from the International Congress of Charities, Correction and Philanthropy (Chicago, 1893) without smiles of amusement, moments of pride, and a deeply moving sense of the progress of nursing over the last half century. Here are not only famous names, but penetrating observations and keen understanding of the needs of patients, the goals of nursing and the responsibilities of administrators which change little over the years. A study of these earlier opinions and experiences puts our current problems in a clearer light, and frequently an amazingly modern-sounding phrase leaps from a page, as—Miss Wald: "Why should a training school or hospital have the right of deciding what a nurse shall charge? [For her services to private patients.] She should have the privilege of setting her own price. It is as much professional work as that of the physician." (Page 104.)

The description of nursing techniques, positively victorian in atmosphere, is rewarding in an occasional practical and still timely suggestions, while the procedures routinely carried out in ob-

stetric care will cause shudders of dismay in the light of our present practice.

Nurses who are interested in psychiatric nursing will enjoy Miss May's report (page 176). Mrs. Kinney's address on the training of attendants (the last in the book) is enlightening, and public health nurses will not want to miss the six or seven papers dealing with district nursing. Here, too, comparisons are inevitable as we read of experienced visiting nurses paid $50 a month and special nurses supplied for "contagious cases."

The League and McGraw-Hill are to be congratulated for reopening this rich mine of nursing history.

DOROTHY DEMING

Modern Trends in Public Health—*Edited by Arthur Massey. New York: Hoeber,* 1949. 549 pp. Price, $12.50.

The student of "social medicine" in Great Britain today should find a store of his country's distinguished history, leadership, and accomplishment in the packed pages of this contemporary summary by well qualified authors. The undergraduate student of medicine in England could do no better than rely upon the 73 chapters as basic for his course in preventive medicine and public health.

The topics are well chosen, though not intended to be inclusive or presented with the detail and technology required by the graduate specialist in administrative posts.

Of these chapters a half dozen deal with various of the more recent trends in thought and social experience for health: The Idea of a Family Health Club; Social Medicine as Academic Discipline; General Practice and its contribution to Preventive Medicine; Combat with Atmospheric Pollution; Chronic Rheumatism as a Public Health Problem; Housing and the Home, the New Outlook.

If one were to select chapters for special praise in the matter of content, form, and spirit, those by Parry of Bristol on Health Centers; by Stocks on Vital Statistics; by Stewart on Occupational Health; by Sutherland on Health Education; by Tattersall on Tuberculosis; and by Williams of Southhampton on Health Control at the Ports are particularly satisfying.

The book will serve a good purpose for the many who take a cultural rather than technical or professional interest in the application of the sciences of preventive medicine for social ends.

A number of social movements of concern to American readers are not dealt with, but most of the indispensables of public health service and participating medical practitioners are treated systematically and in suitable detail within the limits of the 549 large and well printed pages. An index is clear and convenient. This monograph has the blessing of Sir Wilson Jameson. The editor, Dr. Massey, has put public health readers in his debt.

HAVEN EMERSON

Recent Advances in Respiratory Tuberculosis—*By Frederick Heaf and N. Lloyd Rusby (4th ed.). Philadelphia: Blakiston,* 1948. 290 pp. Price, $5.50.

In the first three editions of this book, the original author, Dr. L. S. T. Burrell, presented a predominantly clinical review of the subject for general practitioners and medical students. The authors of this fourth edition have followed the same pattern because they "have felt that the subject Respiratory Tuberculosis could best be presented as a consecutive narrative with the new developments engrafted upon a background of the ideas and conceptions previously held."

The book is thus largely a manual or synopsis of the general principles of the pathogenesis, diagnosis, treatment, and prevention of tuberculosis, rather than being primarily an account of "recent

advances." Within this scope, the presentation on the whole is adequate. Because it *is* predominantly clinical in character, it might be useful chiefly as a reference on this aspect of tuberculosis.

Epidemiological data and the principles of the modern tuberculosis control program are presented almost entirely with reference to conditions in Great Britain. EDWARD X. MIKOL

Social Work Year Book, 1949 *(10th ed.)—By the Russell Sage Foundation. New York: Russell Sage,* 1949. 714 pp. Price, $4.50.

It would be helpful if more public health workers became thoroughly familiar with this book which is published biennially as a concise encyclopedia descriptive of organized activities in social work and related fields. The present edition, the tenth in the series, like its predecessors, contains two main divisions, the first consisting of 79 signed articles written by authorities on a variety of topics, and the second consisting of four directories of agencies whose programs are integral with or related to the subject matter of Part I.

Topical articles on subjects of special interest in public health include that on medical care by Dean A. Clark and Katharine G. Clark; on social hygiene by Walter Clarke, M.D.; on public health nursing by Anna Fillmore, R.N.; on sight conservation by Winifred Hathaway; on the crippled by Lawrence J. Link; on mental hygiene by Thomas A. C. Rennie, M.D.; on public relations by Mary Swain Routzahn; on public health by Leonard A. Scheele, M.D.; on medical social work by Theodate H. Soule; on chronic illness by Milton Terris, M.D.; on maternal and child health by A. L. Van Horn, M.D.; and on school health services by Charles C. Wilson, M.D.

The book is particularly well suited for those seeking a broad view of current affairs in this field, for example, such as students and overseas visitors in the United States. It is a volume for daily reference on the desk of the administrator.

REGINALD M. ATWATER

Health Teaching in Schools—*By Ruth E. Grout. Philadelphia: Saunders,* 1948. 320 pp. Price, $4.00.

This time the saying, "you can't judge a book by its cover," is incorrect. The cover is but a foretaste of the excellence of the product within. In fact the cover is so compelling that one must pick up the book for a closer inspection when it is first seen.

Health Teaching in Schools enables the prospective teacher or the teacher in service to gain an understanding of the health needs of children, and how these needs may be used as a basis for the health education program.

Emphasis throughout is on the application of sound educational philosophy and method in the development of the health education program. The relationship between school and community is stressed. Particular attention is given to the role of community resources which can contribute to the school health program.

The practical aspects of health teaching in the classroom are discussed in two chapters, Guides to Health Teaching in Elementary Schools, and Guides to Health Teaching in Secondary Schools. The text contains abundant examples from all parts of the country to illustrate the application of accepted educational methods.

Chapter VIII on audiovisual materials in health education not only discusses their place and use in the school health program, but also where these materials may be obtained.

Under the title Co-Workers in Health Education is presented a summary of all the persons, organizations and agencies, official and voluntary, local, state

and national, that have any relation to the school health program. The point of view expressed in this chapter can best be presented in the words of the author: "Health education is a function of many individuals and groups within the school and community aside from the teachers themselves. . . . Only as each citizen participates actively in personal and community health betterment and only as groups learn to pool their resources through unified efforts, will the community's most urgent health problems be met. No one individual or agency alone can accomplish these ends. All must be co-workers on a united front."

Format, paper, and printing are good.

This book is a valuable addition to health education. It should find many uses in the expanded teacher education program in health education.

S. S. LIFSON

The Quest for Pure Water—*By M. N. Baker. New York: American Water Works Assn.*, 1948. 527 pp. Price, $5.00.

Do you know that records almost 4,000 years old recognize the efficacy of boiling water to make it safe to drink? What did the biblical Mosaic laws have to say about water purification? Who were the pioneers in water purification in the United States? When was water softening first undertaken on a full municipal level in the United States?

This volume by Mr. Baker will answer many more questions than those asked above. It is the history of water purification as compiled by him during many years as Associate Editor of *Engineering News Record*, as he found it in engineering history from many parts of the world, and as related to him by individuals from firsthand experiences and records.

It is not a textbook of water treatment. Rather, starting with records that go back to early Sanskrit, it carries the story of water purification through Europe and the United States, from slow sand filtration to rapid filtration, from softening to the elimination of tastes and odors. It will save hours of research time for those who are looking for background material, and prove fascinating reading to anyone interested in safe water supplies. It is generously illustrated and thoroughly documented.

FRANCIS B. ELDER

The Commonsense Psychiatry of Dr. Adolph Meyer—*Edited by Alfred Lief. New York: McGraw-Hill*, 1948. 677 pp. Price, $6.50.

This book is much more than an edited compilation of the writings of Dr. Adolph Meyer. While it brings together 52 selected papers by Meyer and creates a source book where the student may for the first time find the basic writings of Meyer, it is also the biography of a great man.

Through skillful organization of his material the author presents the development of Adolph Meyer through his experiences, his action, and his thinking. The volume is divided into sections dealing with successive phases of Dr. Meyer's career, his early life in Switzerland, his education and training in Europe, the various positions he held in Illinois, Massachusetts, New York, and, finally, at Johns Hopkins in Baltimore. In each of these there is a preliminary account of the circumstances of his work, the things he accomplished and something of his associates. Following are selections of the articles written by Meyer in their particular period. It is fascinating to watch the growth in thinking of a man as portrayed in his own writings, organized, however, by an able biographer in such a way as to be correlated with the time and place and events of the subject's life.

The volume is, however, more than a biography, more than a collection of papers. It is a history of the develop-

ment of psychiatry and mental hygiene in this country. It is not strange that this should be so, for in one way or another, Meyer was connected with every major development in these fields during his lifetime.

While the book will have great interest for professional people working in the field of psychiatry, it should appeal also to all those who enjoy well written biography. Alfred Lief in this biography of a distinguished psychiatrist has added another to his list of similar achievements.

JAMES M. CUNNINGHAM

Your Teeth: How to Save Them —*By Herbert Yahraes. New York: Public Affairs Committee,* 1949. 30 pp. Price, 20¢.

This is a very up-to-date booklet giving the latest information on dental health. Its chapter make-up is good and each one is complete in the information it offers.

It is too long for the average parent to read and should not be distributed through this channel. Its language in many instances is also a bit too technical and would discourage the average parent from reading; however, there is always a special need for material of this kind in certain parent groups where the educational level is particularly high and the trend is toward study group programs.

Technical material of this type organized as a complete unit in a pamphlet of this kind has many suggested uses in the field of dental health education. Public health nurses can assimilate much added information for use in their work. Teacher training institutions, college health courses, and nurse's undergraduate and postgraduate training schools could make excellent use of this pamphlet in their curriculum planning.

Never to be neglected is the excellent possibility this booklet offers teachers as a reference source in classroom study where units of dental health may be formulated or assigned. These outlets for use of this material make it an excellent adjunct in the field of dental health education and it serves a definite need.

L. A. GERLACH

Safer Ways in Nursing to Protect against Tuberculosis — *Prepared by the Joint Tuberculosis Advisory Service of the National League of Nursing Education, National Organization for Public Health Nursing, and the National Tuberculosis Association, New York.* 1948. 108 pp.

This satisfying complete, practical, and accurate handbook is an outstanding example of what happens when national organizations pool their knowledge and write for the nurse in the field —wherever she may be—home, hospital, or clinic. The fundamental principles are discussed, defined, applied, adapted. Every nurse—and this is for once an all inclusive statement—should read and use the directions in this handbook and then keep them on hand for ready reference. An attendant who follows these suggestions conscientiously may be assured that he or she is carrying out every known precaution to prevent the infection of himself or others. The handbook is well documented for those who wish to check the facts or read further in a subject, and it contains concrete lists of equipment, formulas, and sources for purchase of materials. Altogether a masterly, universally needed contribution to safer nursing ways.

DOROTHY DEMING

Your Baby—*By Gladys Denny Shultz and Lee Forrest Hill. Garden City, N. Y.: Doubleday,* 1948. 278 pp. Price, $3.50.

Shultz and Hill have restored to the infant and preschool child the male parent. He gives the first bath to the new-born. There are jobs for him dur-

ing breast feeding on the self-demand schedule. He plans the daily work schedule with the mother. He is needed to arrange living quarters and play areas.

This book correlates child development with psychological implications. Fluctuations in appetite are connected with rate of growth. Peculiarities of food likes and dislikes of preschoolers are clarified. Repeated respiratory infections are explained as a means of increasing immunity.

The presentation on habit training may be confusing. The daily schedule includes toileting at the age of 7 months, although it is stated that sphincter control develops at 24 months of age and that self-training is preferred. The effect on posture of the recommended stomach sleeping and confinement to play pens is debatable at present. Although "rooming-in" is advocated for the future, we should like to have had natural childbirth mentioned also.

This book is beautifully illustrated and has space for the record of one child. Its emphasis on paternal participation in child care is to be commended. HARRIET E. NORTHRUP

Measurements of the Public Health—*By F. A. E. Crew. Edinburgh, Scotland: Oliver and Boyd,* 1948. 237 pp. Price, 18s.

This book presents interesting vital statistics of the population of Scotland, together with their interpretation by the author. It contains a wide variety of charts, graphs, and tables in its eight chapters. The rates and ratios are grouped by chapter to cover population, birth and fertility rates, illegitimacy, multiple births, sex-ratio, marriage, biology of death, and stillbirth, infant mortality and maternal mortality.

The rates and ratios given are indeed good standards by which the health status of a given area can be measured. The interesting and valuable knowledge gained from age-specific deaths of tuberculosis, for example, is well known. The author, therefore, by careful analyses of such data has rendered a worthwhile service to those in Scotland who have responsibilities in public health administration, or "Social Medicine" as it is designated by the author.

Students of the measurements of public health would be interested in the *Evaluation Schedule* of the American Public Health Association and the current research on its validity as another instrument for measuring an area's health status and accomplishments. The *Evaluation Schedule* which is now in its 29th year as a measuring device selects much different criteria. The *Evaluation Schedule* is believed by the reviewer to be a more rounded instrument in that it includes an evaluation of such criteria as immunization levels, the status of basic environmental sanitation and the like, and to some extent, of public health practice.

ROBERT E. ROTHERMEL

Experimental Immunochemistry—*By Elvin A. Kabat and Manfred M. Mayer. Springfield, Ill.: Thomas,* 1948. 551 pp. Price, $8.75.

This book brings together, for the first time methods which have been useful in providing quantitative results in the field of immunology. The subject of experimental immunochemistry is presented in 4 parts. In Part I are discussed clearly and concisely the definitions and methods of immunology: precipitin reaction, agglutination, complement, complement-fixation, anaphylaxis, and the characterization of antibodies. Part II describes uses and applications of quantitative immunochemical methods to many problems. Part III is devoted to a compilation, with descriptions, of methods of characterizing substances in which an immunologist may become interested. Included are 11 sec-

tions on procedures for determination of various chemical groupings, 7 sections on methods of studying the physical properties of substances, as well as sections covering other procedures ordinarily carried out by the immunochemist. Some methods are given in a sketchy manner, but all are well documented with references to the original articles. Part IV deals with preparations of individual proteins, polysaccharides and related substances whose immunological behavior has been studied. Finally an appendix is included which gives details regarding minor points of technique.

The book is well written and contains an abundance of tables and figures which are taken from reference articles and show data obtained by the experimental method under consideration. While it does not cover the theoretical aspects of immunology, the book does provide a stimulating array of methods for the study and use of antigens and antibodies by the chemist as well as the bacteriologist and immunologist.

GEORGE A. HOTTLE

District Nursing. *A handbook for district nurses and for all concerned in the administration of a district nursing service—By Eleanor Jeanette Merry and Iris Dundas Irven. Baltimore: Williams and Wilkins,* 1948. 266 pp. Price, $4.00.

This little handbook, designed primarily for public health nurses in Great Britain, is of deep interest to public health workers on this side of the Atlantic where conditions are so different. The book provides an overall picture of public health nursing procedures, and includes chapters on public health administration, public health legislation, and social insurance. The authors are brief and concise, and have outlined their material clearly. To the general reader, they may seem somewhat didactic, and, in a few instances, accuracy has been sacrificed to brevity. The chapter on Family Health Teaching contains many helpful ideas for the public health nurse in the home and in the clinic. The discussion on midwifery and maternity is also extremely helpful.

The book is well illustrated with photographs selected to show public health nurses at their work and to supplement the discussions. There are also some excellent sketches showing the necessary equipment in the home for such procedures as administration of insulin or for a surgical dressing. Copies of various record forms and printed instructions are included, and will prove interesting to the reader.

The authors are well equipped, both by preparation and experience to prepare such a handbook, and throughout their work there is a note of kindly understanding and appreciation for what the public health nurse is trying to do in her work with the families assigned to her care. KATHLEEN M. LEAHY

Symposium on Medicolegal Problems. *Under the Co-Sponsorship of the Institute of Medicine of Chicago, the Chicago Bar Association, and the Chicago Medical Society—Edited by Samuel A. Levinson. Series Two. Philadelphia: Lippincott,* 1949. 276 pp. Price, $5.00.

This is the second of the able and interesting reports of the joint meetings of physicians and attorneys in Chicago. The first, concerned with medical witnesses, artificial insemination, pathology, sterility operations, trauma, and cancer, and scientific tests as evidence, was reviewed in the June, 1948, issue of this *Journal.* The current series is somewhat broader and more thorough than the first. It begins with a most comprehensive and rather technical discussion by W. M. Krogman, Ph.D., of the human skeleton in legal medicine, with legal comments by A. R. Peterson, Esq. For those interested in deter-

mining with reasonable accuracy the age, sex, race, and height of a deceased human body from a few available bones or fragments of bones, invaluable assistance will be found in this section, which is said to be the first integrated presentation of this material.

Other subjects include psychiatry and the civil law, the medical aspects of which are capably presented by F. J. Gerty, M.D., and the legal by Judge H. M. Fisher; psychiatry and the criminal law, discussed from the medical viewpoint by P. L. Schroeder, M.D., and from the legal by W. F. Crowley, first assistant State's attorney; federal control of drugs and cosmetics, by Morris Fishbein, M.D., and A. M. Loverud, Esq., principal attorney, Food and Drug Division, Federal Security Agency; and radiation hazards and health protection in radioactive research, including the atom bomb and its products, by A. M. Brues, M.D., who was associated with the Manhattan District, and A. J. Bowe, Esq. It is interesting and distinctly startling to note that the radioactive effects of just one of the bombs used at Bikini is equivalent to that of several thousand tons of radium, whereas the average radiologist has carefully locked up in his safe in a platinum or lead container not more than 25 to 50 milligrams of radium, or perhaps one one-thousandth of an ounce.

Each of the sets of papers is followed by a question and answer period, and Dr. Levinson contributes a summary of the facts presented in this well printed book. It should be of great interest and value to all who are concerned with these timely problems.

JAMES A. TOBEY

Perspective in Medicine. *Six Lectures to the Laity on Frontiers of Medical Research. The March of Medicine, 1948. New York: Columbia University Press,* 1949. 163 pp. Price, $2.50.

This volume represents the 13th annual series of the Laity Lectures of the New York Academy of Medicine presented during the year 1947–1948. Six lectures fit well under the topic "Perspectives in Medicine" as follows: The Atom in Civil Life by Lewis L. Strauss of the U. S. Atomic Energy Commission; Food and Civilization by Sir Raphael Cilento, M.D., Director of the Social Division of the United Nations; On Being Old Too Young by Edward J. Stieglitz, M.D., of the Suburban Hospital, Washington, D. C.; Perspectives in Cancer Research by Cornelius P. Rhoads, M.D., Director of the Memorial Hospital, New York; Psychiatry for Everyday Needs by William C. Menninger, M.D., of Topeka, Kans., and The Inter-Relation of Pure and Applied Science in the Field of Medicine by James B. Conant, Ph.D., President of Harvard University.

On the whole, these lectures represent a very good adjustment of the story in these technical fields to the vocabulary of the intelligent reader. The Academy is to be congratulated on this edition of the series.

REGINALD M. ATWATER

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

AMERICAN FOUNDATIONS AND THEIR FIELDS VI. Edited by Wilmer Shields Rich and Neva R. Deardorff. New York: Raymond Rich Associates, 1948. 265 pp. Price, $6.00.

AMERICAN YEAR BOOK 1948. Edited by William M. Schuyler. New York: Thomas Nelson, 1949. 814 pp. Price, $15.00.

A BABY IS BORN. Milton I. Levine and Jean H. Seligmann. New York: Simon & Schuster, 1949. 54 pp. Price, $1.50.

CLASSIFIED BIBLIOGRAPHY ON GERIATRICS AND THE CARE OF THE AGED. John J. Griffin. Somerville, Mass.: Bureau of Old Age Assistance, 1948. 80 pp. Price, $2.10 postpaid, $1.85 prepaid.

CONFERENCE ON METABOLIC ASPECTS OF CONVALESCENCE. Transactions of the 17th Meeting March 29–30, 1948. New York: Josiah Macy Jr. Foundation. 246 pp. Price, $4.00. Transactions of the 16th Meeting, October 27–28, 1947. 108 pp. Price, $3.00.

COMMON SENSE ABOUT FUND RAISING. Robert Keith Leavitt. New York: American Book, 1949. 76 pp. Price, $2.00.

DIAGNOSTIC TESTS FOR INFANTS AND CHILDREN. H. Behrendt. New York: Interscience, 1949. 491 pp. Price, $7.50.

DISCIPLINE. James L. Hymes, Jr. New York: Teachers College, Columbia University, 1949. Price, $.60.

ENCYCLOPEDIA OF CRIMINOLOGY. Edited by Vernon C. Branham and Samuel B. Kutash. New York: Philosophical Library, 1949. 527 pp. Price, $12.00.

FACTS ABOUT THE CHANGE OF LIFE. E. C. Hamblen. Springfield, Ill.: Thomas, 1949. 86 pp. Price, $2.50.

FIRST AID TEXTBOOK FOR JUNIORS—AMERICAN RED CROSS. Philadelphia: Blakiston, 1949. 127 pp. Price, $1.00.

FOOD AND FACTS FOR THE DIABETIC. Joseph H. Barach. New York: Oxford University Press, 1949. 113 pp. Price, $4.00.

HAVING YOUR BABY. Leonard H. Biskind. Portland, Ore.: Western Journal of Surgery Publishing Co., 1949. 91 pp. Price, $2.50.

HEALTH EDUCATION IN SCHOOLS. Jesse Feiring Williams and Ruth Abernathy. New York: Ronald Press, 1949. 307 pp. Price, $3.50.

HEATING VENTILATING AIR CONDITIONING GUIDE 1949. Vol. 27. New York: American Society of Heating and Ventilating Engineers, 1949. 1384 pp. Price, $7.50.

HELP YOURSELF TO BETTER SIGHT. Margaret Darst Corbett. New York: Prentice-Hall, 1949. 218 pp. Price, $2.50.

THE HOUSE IN WHICH YOU LIVE. Ange Belle Chandler Riley. Los Angeles: Research Publishing Co., 1949. 199 pp. Price, $3.00.

HOW TO BECOME a DOCTOR. George R. Moon. Philadelphia: Blakiston, 1949. 126 pp. Price, $2.00.

LA ESCUELA Y LA SALUD. J. Saralegui. Montevideo, Uruguay: Imprenta National, 1949. 435 pp.

MIRROR OF YOUR MIND. Lawrence Gould. New York: Frederick Fell, 1949. 190 pp. Price, $1.95.

THE MOST DESIRABLE PERSONAL CHARACTERISTICS. New York: Engineers' Council for Professional Development, 1949. 25 pp. Price, $.25.

THE NATURAL HISTORY OF MOSQUITOES. Marston Bates. New York: Macmillan, 1949. 368 pp. Price, $5.00.

NEW HOPE FOR THE HANDICAPPED. Howard A. Rusk and Eugene J. Taylor. New York: Harper, 1949. 224 pp. Price, $3.00.

OFFICE MANAGEMENT FOR HEALTH WORKERS. Frances King and Louis L. Feldman. New York: Commonwealth Fund, 1949. 158 pp. Price, $2.25.

POLIOMYELITIS. Papers and Discussions Presented at the First International Poliomyelitis Conference. Philadelphia: Lippincott, 1949. 353 pp. Price, $5.00.

PRINTING AND PROMOTION HANDBOOK. Daniel Melcher and Nancy Larrick. New York: McGraw-Hill, 1949. 386 pp. Price, $6.00.

PROBLEMS OF EARLY INFANCY. Transactions of the Second Conference March 1–2, 1948. New York: Josiah Macy, Jr., Foundation. 120 pp. Price, $1.00.

PROFESSIONAL GUIDE FOR JUNIOR ENGINEERS. William E. Wickenden. New York: Engineers' Council for Professional Development. 56 pp. Price, $1.00.

A PSYCHIATRIC APPROACH TO THE TREATMENT OF PROMISCUITY. New York: American Social Hygiene Association, 1949. 81 pp. Price, $.75.

PSYCHOLOGY FOR THE PROFESSION OF NURSING. Jeanne G. Gilbert and Robert D. Weitz. New York: Ronald Press, 1949. 263 pp. Price, $3.00.

PUBLIC HEALTH AND HYGIENE. A Student's Manual. Charles Frederick Bolduan and

Nils William Bolduan. (4th ed.). Philadelphia: Saunders, 1949. 407 pp. Price, $4.25.

PUBLIC HEALTH STATISTICS. Marguerite F. Hall. New York: Hoeber, 1949. (2nd ed. rev.). 403 pp. Price. $7.50.

THE PUBLIC WELFARE DIRECTOR 1949. Chicago, Ill., American Public Welfare Association, 1949. 342 pp. Price, $3.50.

SAFETY THRU ELEMENTARY SCIENCE. Washington, D. C.: National Education Association, 1949. 40 pp. Price, $.50.

SOCIAL SURVEYS. A Guide for Use in Local Planning. New York: Council of Jewish Federations and Welfare Funds, 1949. 29 pp. Price, $.50.

STUDIES OF BRUCELLA INFECTION IN PUERTO RICO. P. Morales Otero. San Juan, Puerto Rico: University of Puerto Rico, 1948. 173 pp.

SUGGESTED SCHOOL HEALTH AND SAFETY POLICIES. Fresno, Calif.: Fresno County Schools, 1949. 85 pp.

TUBERCULOSIS REFERENCE STATISTICAL YEARBOOK. Year 1947 with Comparative Summaries for 1946, and Previous Years. New York: New York Tuberculosis and Health Association, 1948.

UNDERSTANDING CHILDREN'S BEHAVIOR. Fritz Redl. New York: Teachers College, Columbia University, 1949. 41 pp. Price, $.60.

UNDERSTANDING YOUNG CHILDREN. Dorothy W. Baruch. New York: Teachers College, Columbia University, 1949. 51 pp. Price, $.60.

VITAMINS AND HORMONES VOL. VI. Advances in Research and Applications. Edited by Robert S. Harris and Kenneth V. Thimann. New York: Academic Press, 1948. 327 pp. Price, $7.80.

THE FOLLOWING REPORTS HAVE BEEN RECEIVED

ACTION FOR HEALTH. Second Annual Report 1949. New York: Health Council of Greater New York. 16 pp.

CHATTANOOGA-HAMILTON COUNTY HEALTH DEPARTMENT. Annual Report 1948. Chattanooga, Tenn.: City Health Department. 14 pp.

THE COMMONWEALTH OF MASSACHUSETTS. Report of the Special Commission to Study and Investigate Certain Public Health Matters. 1948. Boston: Wright & Potter, 1949. 297 pp.

EDMONTON, ALBERTA, CANADA. Report of the Local Board of Health 1948. Edmonton, Canada: City Department of Health. 22 pp.

FEDERAL WORKS AGENCY, 1948. Ninth Annual Report. Washington, D. C.: Superintendent of Documents. 46 pp. Price, $.20.

THE GATEWAY TO THE SOUTH'S HEALTH. Annual Report 1948. Louisville and Jefferson County Health Department. Louisville, Ky.: City Health Department. 85 pp.

HEALTH IN CATTARAGUS COUNTY 1947. Annual Report of the County Department of Health. Olean, N. Y.: City Health Department. 54 pp.

HONOLULU, ANNUAL REPORT OF THE PUBLIC HEALTH COMMITTEE 1948. Honolulu, Hawaii: Public Health Committee, 1948. 15 pp.

KANSAS CITY AND WYANDOTTE COUNTY, KANSAS, ANUAL REPORT. 1948. Kansas City: City Department of Health, 1949. 33 pp.

NEWARK, N. J., HEALTH REPORT FOR THE YEAR 1948. Newark, N. J.: City Department of Health. 29 pp.

NOVA SCOTIA, CANADA. REPORT OF THE DEPARTMENT OF PUBLIC HEALTH 1948. Halifax, N. S.: King's Printer, 1949. 471 pp.

PITTSFIELD, PA.. ANNUAL REPORT 1948. City Department of Health. 21 pp.

PROCEEDINGS—CONFERENCE ON UNION HEALTH PROGRAMS. GALESBURG, ILL. February 3–4, 1949. Urbana, Ill.: Institute of Labor and Industrial Relations.

PROCEEDINGS—GREAT PLAINS REGIONAL CONFERENCE ON LOCAL HEALTH UNITS. ARKANSAS, KANSAS, LOUISIANA, MISSOURI, OKLAHOMA. New York: National Advisory Committee on Local Health Units, National Health Council. 23 pp.

PROVINCE OF BRITISH COLUMBIA. Third Report of the Department of Health and Welfare (Health Branch) 1948. Victoria, B. C.: Don McDiarmid, 1949. 106 pp.

PUBLIC HEALTH PROGRESS IN ALASKA. JANUARY 1949. Juneau, Alaska: Territorial Department of Health, 1949. 78 pp.

REPORT OF THE REGIONAL DEMONSTRATION WORKSHOP ON TEACHER EDUCATION FOR HEALTH IN SECONDARY SCHOOLS. At the University of New Mexico, Albuquerque, N. M. June 13–25, 1948. Washington, D. C.: Federal Security Agency, Office of Education. 64 pp. Free.

STATE OF GEORGIA—DEPARTMENT OF PUBLIC HEALTH—ANNUAL REPORT 1947. Atlanta, Ga.: State Department of Health. 407 pp.

STRONG-CARTER DENTAL CLINIC ANNUAL REPORT 1948. Honolulu, Hawaii: Palama Settlement. 36 pp.

THEY NEVER SUSPECTED. Factual Report on a Family Nutrition Study. Mansfield, Ohio: Westinghouse Electric Corporation. Home Economics Institute, 1948. 48 pp.

WASHINGTON STATE HOSPITAL STUDY. Seattle, Wash.: State Dept. of Health, 1949. 79 pp.

WATER POLLUTION. A Policy and Program for Control. Baltimore, Md.: Water Pollution Control Commission. State of Maryland, 1949. 30 pp.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Guidance and Understanding—This is an exciting era in obstetrics adorned with the new phrases like, "childbirth without fear," "painless childbirth," "natural childbirth," "relaxation exercises," "rooming in," "self-demand feeding," and "early ambulation." So begins a story of a clinic in which a real educational job is done.

BOYLE, F. Public Health Nurse in an Obstetrical Clinic. *Pub. Health Nursing* 41, 5: 253 (May), 1949.

Letter from Great Britain—At the first London County health center, now authorized, medical and dental practitioners, and local health staffs will be housed together for a more effective collaboration between curative and preventive medicine.

BROCKINGHAM, F. The General Practitioner in Great Britain in 1949. *Canad. J. Pub. Health* 40, 4:171 (Apr.), 1949.

Here To Stay: They Say—Canadian children under 16 receive a government allowance of $5 to $8 a month. No strings attached! In the United States this would mean a 3¼ billion appropriation. Are you interested?

CLOSE, K. Dominion Pay for Every Child. *Survey* 85, 5:245 (May), 1949.

Rats and Repairs—Is this something you, too, haven't thought much about? An estimate of the number of rats in a city is clearly necessary for an evaluation of the problem and the effect of repressive measures. That introduction set me off in pursuit of the novel assumption, and I hope it will do the same for you.

DAVIS, D. E., AND FALES, W. T. The Distribution of Rats in Baltimore, Maryland. *Am. J. Hyg.* 49, 3:247 (May), 1949.

Ten Years Later—After a riotous start marred by ugly legal and extra-legal shenanigans, the Group Health Association of Washington has become a respectable, prepaid medical service, its staff accorded hospital privileges, and accepted in medical societies. Incidentally, the scheme is increasingly successful.

ETKIN, S. A Decade's Experience in the Operation of a Group Medical-Care Organization. *New England J. Med.* 240, 18:703 (May 5), 1949.

About Ready Cures for Social Ills—When we speak as professionals about matters beyond our knowledge and training, we weaken our authority to speak and to act in matters within our professional range. This gem is culled from a warning to the dilettante mental hygienists among us plodding health workers—a warning covering a lot of ground, incidentally.

GINSBURG, S. W. Social Science and Social Action: Implications for Mental Hygiene. *Ment. Hyg.* 33, 2:236 (Apr.), 1949.

More Recruits—In this study, every third patient who registered at the prenatal clinic was conditioned for childbirth without anesthetics. Provided the proper services are available the scheme is physically safe and psychologically desirable, conclude the researchers.

GOODRICH, F. W., JR., AND THOMS, H. A Commentary on Natural Childbirth. *Pediatrics* 3, 5:613 (May), 1949.

Not Like Rubella—During the 1947 mass vaccination in New York, 4,172 women received vaccine while in the first trimester of pregnancy. There was no evidence of any deleterious effect upon the developing embryo.

GREENBERG, M., *et al.* The Effect of Smallpox Vaccination During Pregnancy on the Incidence of Congenital Malformations. *Pediatrics 3*, 4:456 (Apr.), 1949.

This I Didn't Read—I imagine this panel discussion on rheumatic fever must be highly useful for all health workers concerned with the care of patients with that disease. Others, more conscientious, will jeopardize their priceless eyesight by wading through 30 solid pages of over-long lines set in 8 point type.

HILL, L. F., *et al.* Rheumatic Fever: Summary of Present Concepts. *Pediatrics* 3, 5: 680 (May), 1949.

Professional Tempus Fugit-s, Too—When there isn't enough to go round, it is doubly important to be sure one child isn't getting more than his share. This time study of a health department showed that school health was eating up most of the nurse's time and that V.D. and infant health were starving.

MALCOLM, J. C., *et al.* Time Analysis of Public Health Nursing Service. *Pub. Health Rep.* 64, 17:523 (Apr.), 1949.

Pediatricians Needed—To summarize a summary, says one of the writers, approaches a *reductio ad absurdum*. Nevertheless, he squeezes a few drops of juice from the already compressed fruits of the now celebrated pediatric survey. It will help you to read this thumbnail reminder of what's wrong with our child health services.

SISSON, W. R., AND HUBBARD, J. P. Child Health Services and Pediatric Education. *Pediatrics 3*, 4:401 (Apr.), 1949.

Cautions Against Caretaking—Here is a little sample, "Officially in Great Britain you are old at sixty if you are a woman. Why, I don't know: but that is a fact—a legal fact. And you are old at sixty-five if you are a man." Don't you think you had better hunt out this paper? There is a lot more in it than just readable writing.

SHELDON, J. H. Old-Age Problems in the Family. *Milbank Mem. Fund Quart.* 27, 2: 119 (Apr.), 1949.

Coördination More Vital Than Centralization—Statistical activities of the 48 state health departments follow 5 basic patterns. (I'd have thought there would be nearer 48 patterns.) Most have no central statistical organization, each division keeping its own records catch-as-catch-can.

SWINNEY, D. D. Current Organizational Patterns of Statistical Activities in State Health Departments. *Pub. Health Rep.* 64, 20:621 (May 20), 1949.

Let the Nurses Do It!—Ways have been worked out to teach nurses, while on the job, to deal with family mental health problems, as part of the daily program of a small health department. This you should know about.

ZIMMERMAN, K. A. The Importance of the Family in the Prevention of Mental Illness. *Milbank Mem. Fund Quart.* 27, 2:133 (Apr.), 1949.

Motion Picture Film Reviews

HOMER N. CALVER, *Film Review Editor*

The Story of Wendy Hill—Diabetes. Color. Sound. 18 min. 16mm. and 35mm. Warner News, Inc., for U. S. Public Health Service and American Diabetes Association. State Health Departments for 16mm.; 35mm. from Chief, Public Health Inquiries Branch, Division of Public Health Methods, U. S. Public Health Service, Washington 25, D. C.

From the medical viewpoint, "The Story of Wendy Hill" presents an accurate story of the discovery of the presence of diabetes mellitus in a young adult and its subsequent care and management. Unfortunately, throughout the first half of the film there is too much background story with too much time being taken to get to the point of the film.

Of course, it is perfectly plausible for diabetes to be discovered upon a routine examination while the patient is in the hospital for some other reason. However, this is certainly not the typical way, and the good doctor's philosophy that being run down by a truck might be considered a good thing is hardly acceptable. It would have been much better to have the patient go through the early symptoms of diabetes, which would lead up to a medical examination with discovery of the disease. The film could then expound upon the virtue of the periodic health examination so that the disease could have been discovered before the symptoms had progressed very far.

The clinical portrayal of the complications of diabetes when left untreated are too sketchy and fail to round out the whole story of the diabetic syndrome.

This film has good educational qualities in that it makes clear that diabetes is a disease to which one can adjust oneself with adequate care. It should be helpful to diabetics in this way, but it has missed a splendid opportunity to emphasize the importance of periodic medical examinations.

It is a very excellent film technically, about the only criticism possible from this angle being that the color is not as brilliant and uniform as we have come to expect in professionally made pictures. This film should be very useful to discussion groups in connection with the proposed educational program of the American Diabetes Association next fall. In such discussions the points of omission can easily be covered.

I. JAY BRIGHTMAN, M.D.
HELEN CROSBY
THOMAS C. STOWELL

Journey into Medicine—Personnel recruitment for public health work. Black and white. Sound. 40 minutes. 16mm. Produced for Department of State. Available for short-term loan from Regional Offices of the U. S. Public Health Service; for purchase from Castle Films, 30 Rockefeller Plaza, New York 20, N. Y. $46.84, less 10% discount to nonprofit organizations.

This documentary film was produced by the U. S. Information Service for showings outside the U.S.A. to give non-Americans an insight into American ways in medicine and public health. It carries a young man through his medical course and his internship in pediatrics, which results in his desire to study public health. There are excellent scenes of good medical teaching against a background of some of America's best teaching institutions (Columbia, Cornell, and Johns Hopkins). The practical side of

the training is organized around an outbreak of diphtheria in Baltimore. The medical and public health content is accurate and well presented. The public service is portrayed in a dignified and attractive manner, and the service motive is well set forth.

The use of this film for recruiting purposes in the United States is limited somewhat by the original objectives of the State Department in its production and distribution.

It would be particularly effective for third and fourth year medical students who are at the period when they are seeking to decide in which field of medicine they can be of maximum service and derive the greatest personal satisfactions.

One wishes that there had been a little less of medical training and a broader treatment of the total activities of the health department.

The type casting is excellently done and some minor roles are played by well known health authorities. Unusually good camera work heightens its intent. Well directed and for its original purpose, well edited. For public health recruitment purposes it would be improved by cutting.

REGINALD M. ATWATER, M.D.
WALTER H. BROWN, M.D.
HOMER N. CALVER

RECENT HEALTH MOTION PICTURE RELEASES

(All 16 mm. sound, black and white, unless otherwise indicated)

IT'S YOUR HEALTH—Dental health education. 18 min.

Southern California State Dental Association, 903 Crenshaw Boulevard, Los Angeles 6, Calif.

EYES THAT HEAR—Deafness. 15 min.

Lexington School for the Deaf, 904 Lexington Ave., New York 21, N. Y.

THIS WAY TO NURSING—Recruitment for nursing education students. 20 min. Also, 35mm.

Emerson Yorke Studio, 35 West 45th St., New York 19, N. Y.

MODERN SURGERY—Resources and techniques of modern hospital—documentation of handling of case in typical family. 18 min.

March of Time Forum Films, 369 Lexington Ave., New York 17, N. Y.

CHARLIE'S MARCH OF TIME—British National Insurance Act. Color. 9 min.

CHILDREN GROWING UP WITH OTHER PEOPLE—Child Relationships at various age levels. 30 min.

CHILDREN LEARNING BY EXPERIENCE — Child training. 40 min.

TOWN RATS—Rat extermination. 16 min.

YOUR VERY GOOD HEALTH — British National Health Service Scheme. Color. 10 min.

British Information Services, 30 Rockefeller Plaza, New York, N. Y.

A QUESTION IN TIME—Cancer Control. 20 min.

THE DOCTOR SPEAKS HIS MIND—Cancer Control. 20 min.

American Cancer Society, 47 Beaver St., New York 4, N. Y.

WHY WON'T TOMMY EAT—Methods of avoiding and handling children's feeding problems. Color. 18 min.

National Film Board of Canada, 620 Fifth Avenue, New York 20, N. Y.

REST AND HEALTH—Importance to youth of sufficient rest and sleep. Color and black and white. 10 min.

WAYS TO GOOD HABITS—Child Guidance. Color and black and white. 10 min.

Coronet Instructional Films, Coronet Bldg., Chicago 1, Ill.

HELPING THE CHILD TO ACCEPT THE DO'S—Social child development from viewpoint of positive instructions. 10 min.

HELPING THE CHILD TO FACE THE DON'TS—Companion piece for previous film, suggestions for handling everyday problems facing parents of small children. 10 min.

Encyclopaedia Britannica Films, Inc., Wilmette, Ill.

COMMUNICABLE DISEASES — For medical and public health groups. Color. 35 min.

Cutter Laboratories, Berkeley 10, Calif.

ASSOCIATION NEWS

SEVENTY-SEVENTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
NEW YORK, N. Y., OCTOBER 24–28, 1949

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Deed C. Thurman, Jr., 2180 Milvia St., Berkeley, Calif., Entomologist, U. S. Public Health Service

APRIL, 1949, JOURNALS WANTED

Due to an unusually heavy distribution of April, 1949, issues of the *American Journal of Public Health*, the headquarters office finds itself embarrassingly short of this number. It will be appreciated if members who can spare this *Journal* will send it collect, addressed as follows: Circulation Department, American Public Health Association, 1790 Broadway, New York 19, N. Y.

A.P.H.A. membership application blank on page XXXIII

THE 77TH ANNUAL MEETING

New York, N. Y., October 24–28, 1949

Hotel Reservation Form

Hotels	*Rooms with Bath*	
	Singles	*Doubles*
Belmont Plaza	$4.00–$7.00	$6.00–$9.00
Governor Clinton	3.50– 5.75	5.50– 9.50
Henry Hudson	3.50– 5.00	6.00– 8.00
Lincoln	4.00– 7.00	6.00– 9.00
Martinique *	3.00– 5.50	5.00– 8.00
McAlpin *	4.00– 7.00	6.50–10.00
New Yorker	4.00–10.00	7.00–13.50
Roosevelt	3.50–10.00	8.00–14.00
Statler	4.50– 7.50	7.00–10.00
Taft *	3.75– 7.00	6.50– 9.00
Tudor	3.00– 5.00	5.00– 9.00
Wentworth *	4.00– 6.00	6.00– 8.00

* The starred hotels which are listed above also provide rooms without baths at the following rates:

	Singles	*Doubles*
Martinique	$2.00–$3.50	$4.00–$5.00
McAlpin	3.00– 3.50	5.00– 5.50
Taft	3.00– 3.50	5 00
Wentworth	3.00– 4.50	5.00– 6.00

MAKE ROOM RESERVATIONS EARLY

APPLICATION FOR HOTEL ACCOMMODATIONS
AMERICAN PUBLIC HEALTH ASSOCIATION

77th Annual Meeting and Meetings of Related Organizations, New York, N. Y.
October 24–28, 1949

(Note that the Meeting opens Monday, October 24 at 9:30 A.M.)

Please make hotel reservation as indicated below:
Double Room with Bath at $..... per day for ..... persons
Single Room with Bath at $..... per day for ..... persons
Double Room without Bath at $..... per day for ..... persons
Single Room without Bath at $..... per day
Suite at $..... per day for ..... persons

ARRIVING: OCTOBER .... Hour ..... LEAVING: OCTOBER .... Hour .....
Please print (or type) names and addresses of all occupants including persons making reservation.

NAME STREET ADDRESS CITY STATE

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Name .....
Street Address .....
City ..... State .....

Mail Direct to the Hotel of Your Choice.

RESERVATIONS WILL BE HELD UNTIL 6:00 P.M. ONLY, UNLESS THE HOTEL IS NOTIFIED OF LATE ARRIVALS

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

POSITIONS AVAILABLE

Medical Social Consultant for city and county health department. Newly created position offering interesting experience in developing a program. Required degree in Medical-Social work and minimum of three years' experience in discharge planning. Write: Personnel Office, City and County Bldg., Denver, Colo.

Veterinarian—public health, graduate of approved school, eligible for licensure; experienced in meat inspection, epidemiology and general sanitation; considerable knowledge of ordinances and health standards; must have administrative ability. Liberal employee benefits. Write: Personnel Office, Rm. 409, City and County Bldg., Denver, Colo.

Public Health Nurses—Three new merit system positions have been established in full-time health departments located in western Washington. Salary range is $3,000 to $3,720 per annum, plus travel allowance, vacation and sick leave with pay. Write: Dr. J. A. Kahl, State Director of Health, 1412 Smith Tower, Seattle 4, Wash.

Medical Director — Quadri - County Health Department headquarters, Golconda, Ill. Applicant must meet the minimum requirements of the Illinois Department of Public Health. Salary $7,200–$8,400 plus 7¢ per mile with personal car; 40 hour week. Rural experience necessary. Write: W. H. Birch, D.D.S., Rosiclare, Ill., giving age, experience, source of M.P.H. and recent photo.

City Health Officer for city of 75,000; northeastern seaboard. Health Officer will have some responsibilities for local hospital. State salary requirements. Write **Box A-65**, Employment Service, A.P.H.A.

Young Physician, trained in public health for position of Deputy County Health Officer. Salary $7,000 a year, plus traveling expenses. Opportunity for good experience in a well organized health department in Michigan. Position is immediately available. Write: **Box A-66**, Employment Service, A.P.H.A.

Health Officers for state and local health departments. Salary $7,200 to $10,020 a year plus travel expenses. Graduates of Class A Medical Schools with one year rotating interneship. Experience preferred. Merit status, vacations, sick leave, retirement. Write: Harold M. Erickson, M.D., State Health Officer, 1022 S.W. 11th Avenue, Portland, Ore.

Senior Sanitary Engineer — exceptional opportunity in Westchester County Health District; rural and urban problems in all fields of public health engineering; sanitary or public health engineering degree and four years in this field, or equivalent combination of education and training; total compensation now offered is $4,200. Write Westchester County Department of Health, White Plains, N. Y.

Physician (male) as Medical Director and assistant to Public Health Officer. Some experience in venereal disease control desirable but not essential. Will have charge of communicable disease and city school health control. Salary $7,290–$8,000, transportation allowance; annual and sick leave and retirement benefits. Must be registered in State of Michigan or have reciprocal registration. Write: Secretary, Personnel Advisory Board, City Hall, Saginaw, Mich.

County Health Commissioner — physician for General Health District, population 45,000. Good local coöperation. Salary $7,500 to $9,000 depending on training and experience. Travel allowance at 6¢ up to $70 in addition to salary. Write: John Eiferd, Sr., Pres., Columbiana County Board of Health, 125 W. 5th St., East Liverpool, Ohio.

Professor of Public Health and director of Student Health Service—12 month appointment, one month vacation. Salary around $7,700 per year. Write the Dean, University of South Dakota, School of Medicine, Vermillion, S. D.

Assistant Director of Public Health—southern city of over 200,000 in City Public Health Department of 150 employees. Must have M.D. and either Masters degree in Public Health or equivalent in experience. Salary $6,144–$7,368. Write **Box A-67**, Employment Service, A.P.H.A.

Public Health Nursing Supervisors for agency undergoing reorganization from

specialized to generalized program. Beginning salary $4,200 per year. Minimum requirements—bachelor's degree, completion of approved program of study in public health nursing, course in supervision, three years in family health program, including supervisory experience.

Public Health Nurses—Beginning salary $3,000 per year. Minimum requirements—completion of approved program of study in public health nursing. Preference given for experience. Write: Miss Janice Mickey, Chief, Bureau of Public Health Nursing, Dept. of Public Health, City-County Bldg., Pittsburgh 19, Pa.

Public Health Dentist—Quadri-County Health Department, headquarters at Golconda, Ill. Applicant must meet the minimum requirements of the Illinois Department of Public Health. Salary $4,800 for the first three months, after which it will be paid at the rate of $5,000 per year with a maximum at the present time of $5,300 plus 7 cents per mile for travel with personal car; 40 hour week. Rural experience necessary. Write W. H. Birch, D.D.S., Rosiclare, Ill., giving age, experience, source of D.D.S., and recent photo.

Health Officer and Director for midwestern city-county health department. Salary range $7,600–$9,100. Write **Box A-68** Employment Service, A.P.H.A.

Young Physician interested in health officer training. Training asignment to be made in Maricopa County for one year, followed by training at the Department's expense at a school of public health. Salary range is $5,100–$5,820. Write: J. P. Ward, M.D., Director, State Department of Health, Phoenix, Ariz.

POSITIONS WANTED

Health Educator, woman, qualified in community and school health education; B.S. in health education and partial credits for Master's degree. Teaching experience includes college health education teaching and supervisor of health education and principal in public schools. Community experience includes community chest and voluntary health agency positions. Considerable experience in writing and lecturing. Interested in responsibie opening school or community health work or as coördinator. Write **Box HE-13,** Employment Service, A.P.H.A.

Veterinarian, M.P.H. degree; 2 years' experience federal meat inspection; 3 years in milk hygiene and assistant in bacteriology in large university. Will consider openings in state or local agencies or institutions. Write: **Box V-8,** Employment Service, A.P.H.A.

Announcements

The West Virginia State Health Department will accept applications for the following positions:

1. **Medical positions at State Level**

   Deputy Health Commissioner
   Director, Cancer Control
   Director, Communicable Disease Control
   Director, Industrial Hygiene
   Director, Tuberculosis Control
   Director, Venereal Disease Control
   Director of Hospitals
   Director of Mental Hygiene
   Must be eligible for West Virginia Medical License. Salary range $7,200–$9,600.

2. **Local Health Officers**

   Minimum requirements: Graduation from Grade A Medical School. At least one quarter graduate study in public health in a recognized school of public health. Two years' full-time administrative experience in public health. Eligible for medical license in West Virginia. Salary range $7,200–$9,600.

3. **Nursing Positions**

   Registered Graduate Nurse—no formal public health nursing education or experience required. Salary range $2,400–$2,640.

   Public Health Nurse—Class B—completion of one semester's or two quarters' work in public health nursing in an approved program. Salary range $2,520–$3,000.
   Public Health Nurse—Class A—completion of one year's approved program of study in Public Health Nursing. Salary range $2,760–$3,240.

Public Health Nursing Supervisor (State Level)—completion of one year's approved program of study in public health nursing in addition to two years' experience in a family health program under qualified supervision, and one year's experience as a generalized public health nursing supervisor. Salary range $3,360–$3,840.

4. Engineer and sanitarian positions

Sanitarian—minimum requirements—college graduation, salary range $2,640–$3,120.

Junior Engineer—graduation from an accredited 4-year college with a major in Engineering, salary range $2,880–$3,840.

For all above positions write: Dr. N. H. Dyer, Commissioner, W. Va. State Department of Health, Charleston 5, W. Va.

Fellowships for Latin-American Physicians

The American College of Physicians and the W. K. Kellogg Foundation, with the coöperation of the U. S. Department of State and of medical schools in the U. S. A., Canada, and Latin-American countries, announce a program of postgraduate medical fellowships. Outstanding young physicians will be nominated by local committees in the countries to the south. Those to whom fellowships are awarded will be brought to this country for a year or more of special training.

Eligibility requirements include citizenship in the country from which application is made and familiarity with its culture and economy, graduation from an acceptable medical school, and completion thereafter of an internship of 12 months or more, ability to use the English language, and assurance of a subsequent teaching affiliation with a medical school in the native country. Those needing some training in English will be assigned to a special course for the purpose in the United States.

The American College of Physicians, operating through its Committee of Fellowships and Awards, will undertake to arrange a suitable program of study in internal medicine or its subspecialties, such as cardiology, gastroenterology, etc., in widely recognized medical educational centers in this country, and to place the fellows appropriately under preceptors in these institutions.

The W. K. Kellogg Foundation will provide each fellow with a monthly stipend adequate for his basic living costs, an allowance for necessary travel within this country or Canada, and will defray the tuition for courses recommended by the preceptor and approved by the sponsors. In view of the pressing need of Latin-American medical libraries, the Foundation will reimburse the fellow for the cost of required textbooks on condition that they become the property of the medical school in which the fellow will teach upon his return home.

Representatives of the Foundation will visit the fellows periodically during their stay in this country for conferences with them and their preceptors, thus to follow their progress. They will also be visited at intervals after their return to their home institutions in an effort to evaluate the end results of their training and to offer any possible assistance to improve teaching, research, and practice in the field of internal medicine in their respective countries.

Advertisement

All communications should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

Opportunities Available

WANTED—(a) Professor of public health and director of student health service; teaching duties in preventive medicine and public health, only; Middle Western university. (b) Director city-county health department; public health certificate or degree, several years' experience required; minimum $10,000; Pacific Coast. (c) Young woman physician to join staff of student health department; young women's college; East. (d) Public health physician to direct school health program; enrollment, 12,000; winter resort city; Southwest. (e) Director student health department; coeducational institution; 4,000 students; East. (f) Public health physician; city-county department; Pacific Northwest. (g) Public health physician to direct district of ten counties; Middle West. (h) Public health physician to direct division of geriatrics and adult hygiene; Middle West. **PH7-1** Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

WANTED—PUBLIC HEALTH DENTISTS FOR FOLLOWING: (a) To direct dental health program for children; United States dependency; duties: include supervising and training native graduate nurses as dental aides; $7,000. (b) Tri-county health department; Middle West. **PH7-2** Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

WANTED—(a) Health educator to join faculty, university department of health; rank: instructor or assistant professor. (b) Sanitary engineers; health department serving population of 300,000; should be qualified to direct sanitation program including all phases of environmental health. (c) Health educator; Master's in public health desirable; New England division of national organization. (d) Health educator; Master's required; Southern California. (e) Chief, vital statistics bureau; should be qualified to serve as general consultant in statistics to entire department and serving on faculty of medical school. **PH7-3** Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

WANTED—PUBLIC HEALTH NURSES FOR THE FOLLOWING: (a) To direct public health nursing department; generalized program; better than average facilities; town of 35,000 near university medical center. (b) Student health appointment; young women's college; East. (c) Administrative position; well staffed department, outside Continental United States. (d) To direct pediatric clinic; university medical center; West. (e) To direct public health nursing; metropolitan department of health; $5,000. (f) To direct visiting nurse association, long established; university medical center; staff of five supervisors, 28 field staff. (g) Student health appointment; one of country's largest universities; September. (h) Staff nurses; bi-county unit; generalized program; Pacific Northwest. **PH7-4** Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Advertisement

Opportunities Wanted

Health Educator; Master's degree, Public Health, Eastern university; four years, health educator, county health department; three years, health coordinator, liberal arts college; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

Health Educator; B.S. (Public Health Nursing); M.S. (Health Education); prefers teaching Health Education in schools or colleges; at present assistant professor university school of public health; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Public Health Dentist; graduate training, public health dentistry, Michigan; several years' successful general practice before specializing; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Public Health Nurse Administrator; B.S. (Education); M.P.H.; four years, consultant in public health and school nursing, metropolitan health department; past several years, director, health education program, county health department; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Public Health Physician; M.D., M.P.H., eastern universities; five years, chief health officer, department of ninety personnel including nine full-time public health physicians; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Sanitary Chemist; M.S. (Sanitary Chemistry); four years, water chemist, county health department; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

NEWS FROM THE FIELD

SUMMARIZING THE PENNSYLVANIA STUDY

The report of the study of Pennsylvania's health services, made under the supervision of Roscoe P. Kandle, M. D., field director of the A.P.H.A., was completed and presented to Governor Duff and Secretary of Health Vaux in February, 1949, in an edition of 1,500 copies, about 1,000 of which were distributed in Pennsylvania and the remainder to a wider public. This was one of the series of state studies which have been subsidized by the Commonwealth Fund of New York during the past 10 years.

Perhaps the initial impetus for the study was given by the Medical Society of Pennsylvania through its Commission on Public Health and Preventive Medicine. Its chairman is Pascal F. Luchesi, M. D., Superintendent and Medical Director of the Philadelphia General Hospital. With the accession to office both of Governor James H. Duff and State Health Secretary, Norris W. Vaux, M. D., and their interest in "a thoroughgoing evaluation of the Commonwealth's public health administration," they jointly requested the A.P.H.A. to make the study. In carrying out the study not only did experts in the various fields of public health serve as consultants, but workshops and other meetings with groups of Pennsylvania citizens formed an integral part of the evaluation. Thus the citizens themselves had a hand in shaping conclusions and recommendations.

Citizen interest in the study and its findings was also made evident in a series of meetings in various parts of the state. These were called by tuberculosis associations, councils of social agencies, community nursing services, and others to discuss problems relevant to the study. Even before the final report was presented to the Governor there was thus created public interest and discussion.

Now a digest of the report has been published in the February, 1949, Commonwealth: *The Magazine for Pennsylvania*. It was prepared by the staff of the magazine. This is a bimonthly magazine prepared for distribution among the state's citizens with an interest in state and municipal affairs. Over 10,000 copies of this number are being distributed to local health administrators and others with a particular interest in community health services.

In the digest the authors have "followed the text of the Survey very closely, with no editorial elaboration." It summarizes the "seven objectives for a new era in Pennsylvania public health" as follows:

1. Increase the efficiency of public health forces.
2. Complete the task of reporting and controlling tuberculosis.
3. Continue to push the eradication of the more common major communicable diseases.
4. Bring all resources of science to bear against rheumatic fever.
5. Reduce materially the ravages of cancer.
6. Attack and vigorously apply active preventive measures to the serious, ever present, and currently increasing problem of mental illness.
7. Insure the continued maximum application of preventive measures to safeguard the health of mothers and children, of industrial workers, and of the older citizens of the Commonwealth.

The digest further summarizes the eight basic recommendations of the Survey as "eight keystones for building Pennsylvania's public health program." These recommendations are:

1. The establishment in the Department of Health of a unit of county or district pub-

lic health administration under a deputy secretary of health.

2. Develop minimum standards of performance for all phases of public health, and apply these standards to the service provided by the state and to the public health activities of each municipality. The insistence by the citizens of the Commonwealth that these standards be met and their acceptance by all health agencies will be necessary for maximum benefits.
3. Decentralize the Department of Health services by establishing district offices, with full-time, qualified district medical directors to administer all direct state services. Every local health worker, both official and voluntary, and all citizen groups should insist on the speedy development of this plan to bring public health services nearer to the people, and to set the stage for local health units. The background of this recommendation is that Pennsylvania's public health law, unique among the 48 states, provides for the direct operation by the State Health Department of local health services in what may roughly be defined as rural areas. Thus the state operates some local health services in each of the 67 counties of the state except Philadelphia and for more than one-fourth of the state's population and more than one-third of the population outside of Philadelphia.
4. Apply a merit system to all public health personnel which will include the best modern practices in recruitment, methods of selection, permanence of employment, equality and adequacy of pay, impartial treatment, and provision for economic security upon retirement. The report found that 90 per cent of health department employees are officially selected under the patronage system with the other 10 per cent in effect so selected although required to be approved by the Civil Service Commission.
5. Extend further professional training opportunities to all the public health workers of the state.
6. Establish public health units in counties, cities, or other municipalities or in combinations thereof, with the state providing supervision necessary to assure the maintenance of acceptable standards of performance.
7. Simplify, revise, and codify if necessary the laws relating to public health.
8. Reorganize the structure of the Department of Health to achieve a clear, direct line of service from the Governor, through the department to the people.

INTERNATIONAL MEETING FOR RABIES CONTROL

An international round table to discuss rabies control along the United States-Mexico Border was held in Nogales, Ariz., on April 26, 1949, under the auspices of the Pan American Sanitary Bureau and with the help of Dr. James H. Steele, D.V.M., Senior Veterinarian of the Atlanta Communicable Disease Center, in organizing the meeting. Dr. Fred L. Soper, Director of the Bureau, called the meeting to order. The following representatives were present:

Dr. Gustavo Argil, Undersecretary, Public Health and Social Welfare, Mexico

Dr. Martin D. Baum, Director, Veterinary Public Health Program, Colorado Department of Health

Dr. James Doughty, New Mexico Health Department

Dr. Jose Figueroa, Director General, Animal Husbandry, Mexico

Oscar Flores, Undersecretary, Animal Husbandry, Mexico

Dr. James H. Steele, U. S. Public Health Service

Dr. Oscar Sussman, Senior Veterinarian, New Jersey Health Department

Dr. Gerardo Varela, Director, Institute of Public Health and Tropical Diseases, Mexico

Dr. Kenneth S. Young, Director, Veterinary Public Health Program, Texas Health Department

ANNUAL MEETING OF SOUTHERN BRANCH

The Southern Branch of the A.P.H.A. held a spirited and successful meeting in Dallas April 14–16. About 400 participants came from 21 states, the District of Columbia, and Mexico. A session was sponsored by each of nine sections of the Southern Branch. In addition there were four general sessions including a banquet.

The Nutrition Section was organized at this meeting and had a full section program. The Biology Section reported the proceedings of its first annual meeting held in April, 1948.

Among the actions taken by the meeting were resolutions recommending pas-

sage of federal legislation insuring health services to every county in the nation, endorsing the research program of the National Institutes of Health, and endorsing the inscription of General William Crawford Gorgas's name in the New York University Hall of Fame. An amendment to the Constitution adding to the list of officers a delegate to A.P.H.A. was passed (*A.J.P.H.* 38:12: 1732 (Dec.), 1948).

The newly elected officers are:

President: George A. Denison, M.D., Health Officer, Jefferson County, Ala.
Vice-Presidents: James H. Stephens, Sanitary Engineer, South Carolina Department of Health
N. H. Dyer, M.D., West Virginia State Health Officer
J. V. Irons, M.D., Director of Laboratories, Texas State Board of Health
Secretary-Treasurer: Ben Freedman, M.D., Director, Public Health Training Center, Louisiana State Board of Health
Delegate to A.P.H.A.: John M. Whitney, M.D., Medical Director, Midwestern Area, American Red Cross

MASSACHUSETTS PUBLIC HEALTH ASSOCIATION

The spring meeting of the Massachusetts Public Health Association was held April 28 at the Massachusetts Institute of Technology in Cambridge, with section meetings devoted to newer developments in cancer control, a panel of health officers on local health department utilization of federal funds, nutrition services in the Boston area, and a panel on accident prevention as a community problem. The final general session was a panel on Community Planning in an Atomic Age led by Shields Warren, M.D., director of the division of biology and medicine, Atomic Energy Commission.

WATER- AND MILK-BORNE DISEASES

The Division of Sanitation, Milk and Food Branch, U. S. Public Health Service, has published another of its summaries of disease outbreaks from water, milk and milk products, and other foods. One summary gives a consolidation of information on reported cases of disease transmitted through milk for the years 1923–1947; another of disease transmitted through water, milk and milk products, and other foods for 1938–1947. As in the past, there has been appended a brief description of each disease outbreak reported in 1947 in which water, milk and milk products, or other foods served as the responsible vehicle.

1949 I.E.S. GOLD MEDAL AWARD

Dr. Ward Harrison, retired Director of the Engineering Division of General Electric Lamp Department, has been awarded the 1949 I.E.S. Gold Medal by the Illuminating Engineering Society. The I.E.S. Medal is the Society's top distinction and is awarded each year "for meritorious achievement conspicuously furthering the profession, art, and knowledge of illuminating engineering." Dr. Harrison has consulted on several occasions with the Joint A.P.H.A.-I.E.S. Committee studying the need of research in illumination.

END OF TUBERCULOSIS IN 1965

The New York State Committee on Tuberculosis and Public Health at its annual conference in May set as its goal the "rooting out" of tuberculosis in the state by 1965. To this end it voted a program of continued coöperation with all governmental agencies and allied groups, with special emphasis on public education, early discovery through chest x-rays, adequate hospital facilities, and rehabilitation service.

HELP IN PLANNING CONTINUOUS SAFETY CAMPAIGNS

The *Home Safety News Letter* was launched in May as a bimonthly by the Home Safety Conference of the National Safety Council. It is designed to serve as a continuous planning guide

for home safety committees and organizations participating in community home safety programs. Instead of one home safety week it suggests every week as a home safety week. The first issue has detailed suggestions for vacation safety, farm safety, canning safety, and for the look ahead toward building safety, play safety, etc.

Available from National Safety Council, 20 N. Wacker Drive, Chicago 6, $1 or a combination of Home Safety Kit, *Home Safety Review*, and the *Newsletter*, $2.

LOCAL HEALTH SERVICES DIRECTORS MEET

At the 3rd annual meeting of the Association of State and Territorial Directors of Local Health Services in Memphis in April, V. A. Van Volkenburgh, M.D., of New York, was elected President. Other new officers are:

1st Vice President: John Williams, M.D., Missouri
2nd Vice President: J. K. Altland, M.D., Michigan
Secretary: Trois Johnson, M.D., Louisiana
Member, Executive Committee: Paul Q. Peterson, M.D., Ohio

Robert E. Rothermel, M.D., Assistant Field Director, and Charles B. Frasher, Field Consultant of the A.P.H.A. Staff were on the program, as were Carl Buck, former field director, and Joseph W. Mountin, Harald M. Graning, M.D., and Donald Simpson of the Public Health Service.

The 1950 meeting of the local health service directors has been scheduled for March in New Orleans.

CHARLOTTE FLUORINATES WATER SUPPLY

On April 1, Charlotte, N. C., became another city in the United States and Canada where domestic water supplies are being fluorinated for expected dental health benefits. The Charlotte Fluorination Demonstration is a fact finding project under the direction of the Charlotte Health Department and paid for by special appropriation of the City Council. Pre-fluorination studies were made with maximum participation of citizen and professional groups. Citizen queries as to taste, effect on goldfish, and photographic solutions antedated the actual introduction of fluoride.

INDIANA CODIFIES ITS HEALTH LAWS

The 1949 session of the Indiana General Assembly passed and the Governor has signed the codification bill of the Indiana State Board of Health. This consolidates the more than 100 Acts dealing with public health, the first of which was passed in 1881, into one Act which has eliminated the confusion, ambiguity, overlapping, and duplication that existed among the separate provisions. It does not make any material change in the substantive law. The laws have been collected into five major groupings—administration, disease prevention and control, vital statistics, sanitation, food, drugs and cosmetics—and a miscellaneous category. L. E. Burney, M.D., is the state health officer under whose general direction this codification was made. The address of the State Board is 1098 W. Michigan St., Indianapolis 7.

CONNECTICUT EXPANDS MENTAL HEALTH PROGRAM

An advisory committee of nine leaders in the fields of psychiatry, health, juvenile problems, social work, and education to plan expansion of Connecticut's mental health program has been appointed by Dr. Stanley H. Osborn, State Health Commissioner; funds will be available under the provisions of the National Mental Health Act. Dr. Elias J. Marsh, Jr., acting director of the State Department of Health's Bureau of Mental Hygiene, will direct the expanded program.

HONOR TWO FLORIDA HEALTH WORKERS

Two staff members of the Florida State Board of Health have been honored for outstanding work in their fields. Roger F. Sondag, M.D., Director, Bureau of Preventable Diseases, was awarded a bronze medal by the American Cancer Society "for distinguished service in cancer control." The Florida Engineering Society selected David B. Lee, M.S., Chief Sanitary Engineer of the board, for exceptional service to the engineering profession of Florida.

GORGAS AWARD TO DR. DEAN

The Association of Military Surgeons of the United States has named H. Trendley Dean, D.D.S., to receive the 1949 Gorgas Award for "outstanding contributions in the field of military medicine." Dr. Dean, who last September was named director of the National Institute of Dental Research, has been with the Public Health Service since 1921, in charge of dental research since 1931. His work on fluoride treatments "may lead to the mass prevention of dental decay."

The award, which is sponsored by the Philadelphia pharmaceutical manufacturers, Wyeth, Inc., will be presented at the annual meeting in Washington on November 11, of the Association of Military Surgeons.

KANSAS PUBLIC HEALTH ASSOCIATION

The 7th annual meeting of the Kansas Public Health Association was held in Pittsburg, April 25–27. An interesting program was developed around the theme, "A Program for Public Health Services in Kansas." Speakers from out-of-the-state included:

John K. Altland, M.D., Bureau of Local Health Services, Michigan Department of Health
Donald A. Dukelow, M.D., Bureau of Health Education, American Medical Association
John E. Gordon, M.D., Professor of Epidemiology, Harvard School of Public Health
Elberton J. Tiffany, M.D., Atlanta Communicable Disease Center
Maysil M. Williams, M.D., Regional Medical Director, U. S. Children's Bureau
Gertrude Morris, R.N., Territorial Nursing Supervisor, Metropolitan Life Insurance Company

The Association voted to meet jointly with the Missouri Public Health Association in Kansas City, Mo., in 1950.

New officers were elected as follows:

President: James M. Mott, M.D., Director, Lawrence-Douglas County Health Department
President-elect: Vernon M. Winkle, M.D., Director, Kansas City-Wyandotte County Health Department
Vice-President: Roberta Foote, R.N., Director Public Health Nursing Education, State Health Department
Secretary-Treasurer: Evelyn Ford, Records Consultant, State Health Department

MISSOURI PUBLIC HEALTH ASSOCIATION

The 1949 Annual Meeting of the Missouri Public Health Association was held in Jefferson City, May 4 to 6, and at this time the following officers were elected:

President: J. Earl Smith, M.D., St. Louis
President-elect: Ina Collins, R.N., Poplar Bluff
First Vice-President: Cecil A. Z. Sharp, M.D., St. Louis
Second Vice-President: Jeanette Burchard, Springfield
Treasurer: John Buxell, St. Louis
Secretary: Albert W. Happy, Jr., Jefferson City
Representative to A.P.H.A. Governing Council: Joseph C. Willett, D.V.M., St. Louis
Representative to Southern Branch, A.P.H.A.: John W. Williams, Jr., M.D., Jefferson City

The 1950 Annual Meeting will be held jointly with the Kansas Public Health Association on April 24, 25, and 26 in Kansas City, Mo.

ARIZONA PUBLIC HEALTH ASSOCIATION

The 19th Annual Meeting of the Arizona Public Health Association was held in Prescott, May 12 and 13, with some 140 members attending. Using the

workshop plan of conducting the sessions, the convention was enthusiastically dubbed by the members as one of the most successful in the history of the organization.

Dr. Robert E. Rothermel, Assistant Field Director, A.P.H.A., addressed the final general session, and Senator Sam Head, the banquet session.

Newly elected officers of the association are:

President: Marion Sprague
President-elect: C. E. Reddick, M.D.
Vice President: Margaret Eacrett
Secretary: Dorris Rakop
Treasurer: Mary Peterson

ILLINOIS PUBLIC HEALTH ASSOCIATION

At its ninth annual meeting held in Chicago April 7 and 8, the Illinois Public Health Association elected the following officers:

President: B. K. Richardson, Springfield
President Elect: Winston H. Tucker, M.D., Evanston
Secretary-Treasurer: Dorothy Fay Dunn, M.S.P.H., Champaign

OHIO ENRICHES FLOUR

A bill has been passed by the Ohio Legislature and signed by the Governor providing for the enrichment of white flour. It became effective on July 1.

NUTRITION BUREAU IN NEW YORK'S HEALTH DEPARTMENT

The New York City Health Department has created a new bureau of nutrition in its division of community health services, one of the five main divisions into which the department's services were reorganized by Health Commissioner Harry S. Mustard, M.D. During the coming year five nutrition clinics will be added in various sections of the city to the single one now in existence. Present educational activities in the publication of nutrition and diet advice will be expanded, as will the department's research studies on nutritional deficiencies and needs of children in different communities. Inservice training courses will be conducted for health deparent personnel on various phases of nutrition as they affect the work of other bureaus.

The director of the new bureau is Norman Jolliffe, M.D., who has completed the editing of a volume on clinical nutrition, slated for spring publication. He is a member of the Food and Nutrition Board, National Research Council, and Chairman of the New York City Food and Nutrition Committee.

PERSONALS

RUTH ACKLAND,† Assistant Chief of Health Education, Hawaii Territorial Department of Health, became Assistant Executive Secretary in charge of health education with the Territorial Tuberculosis Association on June 1.

CALVIN C. APPLEWHITE, M.D.,† Medical Director, Public Health Service of Federal Security Region 6 with headquarters in New Orleans, went on terminal leave on May 17 until his retirement from the Service on October 1, 1949. JOHN B. HOZIER, M.D.,† succeeds him as Acting Medical Director for Region 6.

GEORGE PACKER BERRY, M.D.,* formerly Professor of Bacteriology and Associate Dean of the School of Medicine and Dentistry at the University of Rochester, N. Y., has been appointed Dean of the Harvard Medical School and Professor of Bacteriology, as of July 1, to assume his duties in the fall. He succeeds SIDNEY BURWELL, M.D., who has resigned as Dean to devote his full time to teaching and research. Dr. Berry is Associate Editor of the *Journal of Immunology* and of *Bacteriological Reviews*, and a member of the editorial board of the *Journal of Bacteriology*.

FREDERICK J. BRADY, M.D., Assistant Chief, Laboratory of Tropical Diseases, National Institutes of Health,

represented the Public Health Service at the first meeting of the International Scientific Committee for Trypanosomiasis Research in London in February.

A. JUNE BRICKER, was named on April 4, as Director of the Home Economics Bureau of the Health and Welfare Division, Metropolitan Life Insurance Co., to succeed ELIZABETH GUILFORD, retired.

DEAN MARGARET BRIDGMAN, on leave from Skidmore College has been appointed for a 2 year period by the Russell Sage Foundation as a special consultant to universities in the field of nursing education to give advisory service on what constitutes sound professional preparation for nursing, how programs may be financed, the procurement of faculty, and the like.

MAX R. BURNELL, M.D., Medical Director of the AC Spark Plug Division of General Motors since 1931, has been appointed Medical Consultant effective July 1, succeeding CLARENCE D. SELBY, M.D.,* who retired on his 71st birthday after 14 years' service as General Motors Medical Consultant.

JEAN CRAWFORD, formerly with the New York State Department of Civil Service, joined the staff of the National Tuberculosis Association on May 1, to assume major responsibility in assisting the field on salary, classification, and general personnel problems.

CHARLOTTE CROCKETT and DORIS JOHNSON, formerly health education and rehabilitation director, respectively, of the Middlesex, Mass., Health Association, joined the staff of the Massachusetts Tuberculosis and Health League last February.

BARBARA DAVIS, is Executive Secretary of the Kauai (Hawaii) Tuberculosis Association, succeeding MABEL WILCOX,† who continues as a member of the Association's Board of Directors.

H. TRENDLEY DEAN, D.D.S.,* Director of the National Institute of Dental Research, Washington, D.C., has been awarded the 1949 Gorgas Award "for outstanding contributions in the field of military medicine."

EARL DEVENDORF,* Director of Environmental Sanitation, New York State Department of Health, Albany, has been appointed Acting Executive Secretary of the new Pollution Control Board of New York State, of which HERMAN E. HILLEBOE, M.D., M.P.H.,* is Chairman.

THOMAS A. DEVENY, JR., formerly probation officer with the Kanawah County Intermediate Court, W. Va., became Executive Secretary of the West Virginia Tuberculosis and Health Association on June 1, succeeding EDMUND P. WELLS,† who resigned to accept a similar position in Maine.

EDWARD P. EGLEE, M.D., was recently elected Chairman of the executive committee of the New York Tuberculosis and Health Association, Inc., succeeding DONALD B. ARMSTRONG, M.D.,* now President.

MARGARET MCIVER ERVIN,† a former Red Cross worker, is health education secretary of the South Carolina Tuberculosis Association.

FLORIDA PUBLIC HEALTH NEWS NOTES

WILLIAM J. PEEPLES, M.D.,† formerly Director of the Troup County Health Department, Ga., has become Director of the Monroe County Health Department with headquarters at Key West. He succeeds JAMES B. PARRAMORE, M.D.,† resigned because of illness.

J. C. MCGUIRE, M.D.,† formerly Director of the Copiah County (Mississippi) Health Department, is now Director of Hardee, DeSoto,

* Fellow A.P.H.A.
† Member A.P.H.A.

and Charlotte Counties Health Unit with headquarters at Arcadia.

PAUL W. HUGHES, M.D.,† has moved from Assistant Health Officer in Alachua County, to Health Officer of Broward County with headquarters at Fort Lauderdale.

L. MAX GARDNER, former Chief of Special Services for the Illinois Division of Vocational Rehabilitation, is now Field Secretary, Illinois Tuberculosis Association.

WRAY GARDNER, M.D., began his duties as Director of the Mental Health Section, Colorado State Health Department, on May 1, and on the faculty of the University of Colorado Medical Center.

FRANZ GOLDMANN, M.D.,* Associate Professor of Medical Care, Harvard School of Public Health, is on leave of absence until December, 1949, to serve as consultant to the Public Health Branch of the Civil Administration Division, Office of Military Government for Germany, under a project sponsored jointly by the Rockefeller Foundation and the American authority.

ANNIE W. GOODRICH, dean emeritus of the Yale University School of Nursing, at the recent Convention in Cleveland of the National League of Nursing Education, received a Mary Adelaide Nutting Nursing Award.

DORITHA GRAHAM, formerly Field Secretary for the Missouri Tuberculosis Association, has joined the staff of the Nebraska Tuberculosis Association.

PAUL D. HANEY,* formerly Associate Professor of Sanitary Engineering, University of North Carolina School of Public Health, has been commissioned by the U. S. Public Health Service and assigned to the Stream Sanitation Section, Water Sanitation Investigation Station, Cincinnati, Ohio.

EMMA HARLING, has returned to Colorado as Mental Hygiene Nursing Consultant in the Public Health Nursing Section, after completing an 18 month course leading to the Master of Arts degree at Columbia University.

WALTER T. HARRISON, M.D.,* Public Health Service Medical Director of Federal Security Region 10 with headquarters in San Francisco, since 1942, retired from the Service July 1. HENRY C. SCHUMACHER, M.D.,* succeeds him as Acting Director of Region 10.

DAVID H. HOLBROOK, who retires on June 30 as Assistant Director of the National Social Welfare Assembly, New York City, received special recognition in the form of a special volume of tributes written by outstanding leaders in the field of welfare for his distinguished contribution to the health and welfare field over the past 38 years.

PAUL J. HOUSER† was appointed Director of the Division of Public Health Engineering, Iowa State Department of Health, Des Moines, on September 1, 1948.

JOHN F. MAHONEY, M.D.,* Director of the Public Health Service Venereal Disease Laboratory, Staten Island, N. Y., late in April went to Norway, Denmark, and Sweden to give a series of lectures on Venereal Disease Control. Given under the auspices of WHO, the lectures were requested by the directors general of public health of the respective countries.

MARGARET ANN MCCARTHY has become Associate in Health Education of Illinois Tuberculosis Association.

PEARL MCIVER, R.N.,* Chief, Public Health Nursing, Bureau of State Services and President of the American Nurses' Association, has recently been in Europe representing the U. S. Public Health Service at the Royal Sanitary Institute Congress meeting, May 23–27, in Brighton, England. She also attended the following meetings of the International Council of

Nurses in Stockholm, Sweden: Board of Directors, June 6–7; Grand Council, June 8–10; and Interim Conference June 12–16.

ROLAND B. MITCHELL, PH.D.,† has resigned as Director of Laboratories for the Florida State Board of Health to become Head of the Department of Bacteriology at the School of Aviation Medicine, Randolph Field, Tex.

ROY J. MORTON,* formerly in the Department of Preventive Medicine and Public Health, Vanderbilt University, is now in the Health Physics Division, Oak Ridge National Laboratory, Tenn.

ANNA G. MURPHY, recently retired as Executive Director of the Waterbury, Conn., Anti-Tuberculosis League, was honored by the league's board of directors at a luncheon marking her completion of 40 years as a tuberculosis nurse.

ROBERT J. NEVILLE, M.D., of Teaneck, N. J., joined the medical staff of the National Foundation for Infantile Paralysis on February 15. He is a staff member of New York Orthopaedic Dispensary and Hospital and of the Bergen Pines Hospital, N. J., which specializes in the treatment of acute and chronic poliomyelitis cases.

ARTHUR L. REAGH, Senior Bacteriologist of the Massachusetts State Department of Health, resigned on March 31, 1949, after 49 years with the department, in which he began the production of smallpox vaccine in 1904.

EDITH E. REIGER, has joined the Mesa County (Colorado) Health Department as public health nurse.

MARY M. ROBERTS, retiring editor-in-chief of the *American Journal of Nursing*, after 28 years of service, received a Mary Adelaide Nutting Nursing Award at the recent 53rd Convention in Cleveland of the National League of Nursing Education.

KENNETH C. Ross,† formerly with the San Diego County (California) Tuberculosis and Health Association joined the staff of the National Tuberculosis Association on April 1 to be in charge of the Association's Training Program.

MARJORIE RUOSS is the new Garfield County, Colorado, public health nurse.

RALEIGH L. STRINGER, has been named President of the newly organized Fisher County (Texas) Tuberculosis Association; CHESTER U. CALLAN, M.D., Second Vice-President.

MARION F. TRICE,* Chief Industrial Hygiene Engineer, Tennessee Department of Public Health, is on a year's leave of absence to join the Institute of Inter-American Affairs as Director of the Department of Industrial Hygiene, Ministry of Health of Peru. He is stationed in Lima.

THEDA L. WATERMAN * resigned in January as Coordinator of Health Services, Tuberculosis Institute of Chicago and Cook County, to become Executive Director of the Central Agency for Chronically Ill of Milwaukee, Wis.

W. W. YUNG, M.D.,† formerly of the Ministry of Health, Nanking, China, has been appointed Director of the Epidemiological Intelligence Station in Singapore, operated by the World Health Organization, effective April 22.

ARTHUR R. ZINTEK, M.D.,† has taken over the active direction of the Tuberculosis Control Work of the Wisconsin State Board of Health. His predecessor, ALLAN FILEK, M.D.,* is now Director of Local Health Administration.

DEATHS

ALICE C. BAGLEY, R.N., (Public Health Nursing Section).

VICTOR F. CULLEN, M.D., former superintendent of the four Maryland State Tuberculosis Sanatoriums, died March 9, after a long illness.

FREDERICK B. DART, M.D., Health Officer, Town of East Lyme, Conn., died February 27 (Health Officers Section).

HARRY F. LEEDS,† District Health Officer, Pitman, N. J. (Health Officers Section).

ALAMIRO VALDES-HERRERA, M.D.,† Coquimbo, Chile, died May 6 (Public Health Education Section).

JOHN T. WRIGHT, M.D. (Senior Surgeon, Regular Corps), of the Laboratory of Biologics Control in the Microbiological Institute, National Institutes of Health, died May 14 of a heart attack, at the age of 37.

CONFERENCES AND DATES

American Congress of Physical Medicine. Netherland Plaza Hotel. Cincinnati, Ohio. September 6–10.

American Hospital Association. 51st Annual Convention. Hotel Statler, Cleveland, Ohio. September 26–29.

American Occupational Therapy Association. Book-Cadillac Hotel. Detroit, Mich. August 20–27.

American Public Health Association—77th Annual Meeting, New York, N. Y. October 24–28.

American Water Works Association. Chesapeake Section. Wardman Park Hotel, Washington, D. C. November 2–4.

Commonwealth and Empire Health and Tuberculosis Conference. Central Hall, London, England. July 5–8.

First International Congress of Biochemistry. Cambridge, England, August 19–25.

Florida Public Health Association. George Washington Hotel. West Palm Beach, Fla. October 6–8.

International Association of Milk and Food Sanitarians. Deschler-Wallick Hotel, Columbus, Ohio. October 20–22.

Michigan Public Health Association. Hotel Statler, Detroit, Mich. November 9–11.

Minnesota Public Health Conference, Nicollet Hotel, Minneapolis, Minn. September 30.

National Association of Sanitarians. Biltmore Hotel, Los Angeles, Calif. August 15–18.

National Education Association. Hotel Statler, Boston, Mass. July 4–8.

National Society for Crippled Children and Adults. Commodore Hotel, New York, N. Y., November 7–9.

II Pan American Congress on Pediatrics. Mexico, D. F. November 2–5.

Third Inter-American Congress of Radiology. Santiago, Chile. November 11–17.

Washington State Public Health Association. Spokane, Wash. September 19-20.

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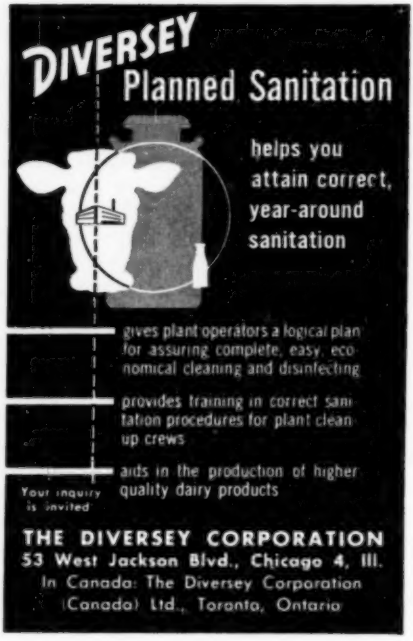
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The Association acknowledges with deep appreciation its indebtedness to its Sustaining Members whose annual dues help support the Association's general program

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Metropolitan Life Insurance Company, New York, N. Y.
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THE NINTH EDITION

of

STANDARD METHODS FOR THE EXAMINATION OF DAIRY PRODUCTS

This manual, prepared by the Committee on Examination of Milk and Milk Products, outlines procedures for the routine microbiological and chemical examinations of the more common dairy products used as food. It includes directions for enumerating, isolating, and identifying members of the coliform group, *Brucella*, streptococci, tubercle bacilli, *Salmonella*, pathogenic *Shigella*, and enterotoxigenic staphylococci.

The resazurin reduction method for the examination of fluid milk is included in this edition. Procedures are given for the examination of condensed milk, dried milk, evaporated milk and of fruits, nuts, flavoring and coloring materials, eggs and egg products, sweetening ingredients and stabilizers when used as ingredients in frozen desserts.

The primary aim in the new edition is to aid the laboratory worker by maintaining uniformity of arrangement and style, by using a system of simple cross references, and by improving the index. To do this, the first chapter on "Selection and Interpretation of Quality Tests" is organized for the guidance of the administrator. The succeeding twelve chapters, now relatively free from interpretive and explanatory matter, provide tried and tested methods for the laboratory worker. A group of "Screening Tests," which do not have approval for unqualified use, but which permit more frequent examinations than otherwise could be made, appear in the last chapter.

The thirteen chapter headings are listed below.

1. Selection and Interpretation of Quality Tests
2. Microbiological Methods for Milk and Cream
3. Detection of Special Bacterial Groups or Species
4. Microbiological Methods for Butter
5. Microbiological Methods for Cheese
6. Microbiological Methods for Frozen Dessert Ingredients
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